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DIESEL RAILWAY TRACTION SUPPLEMENT

The August issue of THE RAILWAY GAZETTE *Supplement, illustrating and describing developments in Diesel Railway Traction, will be ready on August 1, price 1s.*

NOTICE TO SUBSCRIBERS

Consequent on further paper rationing, new subscribers cannot be accepted until further notice. Any applications will be put on a waiting list which will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

REDUCTION IN SIZE OF PAGE

To economise in paper our readers will observe a slight reduction in the size of THE RAILWAY GAZETTE *in that the size of the page has been reduced from 9 in. × 12 in. to 8½ in. × 11½ in. The type area of the page remains the same, namely, 7 in. × 10 in., but the surrounding margins have been reduced. This of course detracts from the appearance of the paper, but is one of the exigencies of the war*

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:
Mondays to Fridays 9.30 a.m. till 5.30 p.m.
The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

The Half-Yearly Dividends

THE dividends which have been announced by the G.W.R., L.N.E.R., and Southern Railway Companies, and the London Passenger Transport Board have been in accordance with the best expectations. Because revenues of the controlled undertakings are now, within a very narrow margin, fixed by reason of the financial agreement with the Government, there was obviously not much scope for variation in the payments as compared with those made a year ago, but the directors, as had been hoped, have generally decided to make more nearly equal the interim and final payments. Thus Great Western ordinary is to receive an interim dividend of 2 per cent. which compares with 1½ per cent. at this time last year, and with the total for the whole of 1941 of 4 per cent. The L.N.E.R. on this occasion is paying 1 per cent. on its 4 per cent. non-cumulative second preference stock—the first occasion on which an interim distribution has been made on this security since 1926; on this stock 2⅜ per cent. was distributed after the close of the accounts for 1941. The Southern Railway is maintaining its interim rate of 2½ per cent. on its 5 per cent. preferred ordinary stock. In some quarters it had been hoped that a payment might be made on the deferred stock of this company, but the Railways (Southern Group) Amalgamation Scheme, 1922 (Section 9) which provides that the deferred ordinary stock is entitled to a dividend each year out of any balance of available net revenue, after payment of 5 per cent. on preferred ordinary stock, stipulates that any such dividend on the deferred stock shall be paid annually. No question, therefore, could arise as to any interim dividend on the deferred ordinary stock, which a year ago received 1¾ per cent. for the whole year. London Transport "C" stockholders are to receive 1¼ per cent. which compares with an interim of ¾ per cent. a year ago; the total amount distributed for 1941 on this stock was 2⅛ per cent. The London Passenger Transport Board, in making known its decision to increase the interim distribution, stated that the reason for the advance in the payment was that the board's income was now substantially covered by the amount of the company's yearly sum receivable under the Railway Control Agreement.

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Revenue Estimates

The statements by the undertakings in making known the dividend decisions do not, of course, give any indication of revenue during the first six months of this year. Under the financial arrangements with the Government, the boards in arriving at the dividend decision are not concerned, indeed, with the results of the operation of their undertakings but merely with the allocation over the half-year of a proportion of the total yearly rental to be paid by the Government, and the relatively small income which is derived from sources outside the scope of the agreement. It is highly probable, of course, that revenues have undergone a substantial expansion during the first half of this year as compared with the similar period in 1941, just as it is likely that the total net revenue for this year will be greater than it was last year. Nevertheless, the sole result of that, in existing circumstances, must be a greater benefit to the Exchequer in that the surplus over the rental will be more, and the long suffering railway stockholder can do no more than resign himself to seeing an increasing amount of the product of the industry, which his sacrifices over many years have helped to bring to its present high level of efficiency, going to the Government, which all too often in the past has rejected pleas for assistance. Estimates which have appeared in some quarters as to the level at which revenues are now running are obviously based on conjecture, but they may well make the railway stockholder feel that he is deemed a very junior partner in the railway industry.

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London Transport Stock Conversion

In our April 10 issue, it was explained that the London Passenger Transport Board had been in negotiation with the Treasury with reference to the redemption of the £12,583,000 of London Transport 4½ per cent. "T.F.A." stock, of which the principal and interest are guaranteed by the transport under the Trade Facilities Acts, 1921 to 1926. Subject to the necessary Parliamentary powers being granted, the Treasury had agreed to the issue by the board of stock of a new class which would have the same ranking as the existing "T.F.A." stock, with a similar guarantee by the Treasury, but carrying a lower rate of interest, which would be determined by the board, with the approval of the Treasury. In some quarters it had been thought that the board would benefit by the saving of interest resulting from the conversion, but a statement which has been issued by the board makes it clear that the saving of interest will not accrue to the board during the period of control. The financial agreement with the railway companies provides that there is to be charged

or credited (as the case may be) to the pool of receipts and expenses of the controlled undertakings the interest on capital raised or capital redeemed after the end of 1937 in the case of the railway companies, and after June 30, 1939, in the case of the London Passenger Transport Board.

When Rivers Threaten Railways

Railway engineers in certain parts of the world have to include in their duties the protection of the lines from rivers oscillating from side to side, by effecting "retirements" or constructing diversions of those lines. For instance, in the June, 1941, issue of the staff magazine of the Missouri Pacific Lines a short article describes the periodic meanderings of the Brazos and associated rivers in the U.S.A., and the measures taken to protect the railway from them. In 1919 the M.P. main line had to be diverted for a distance of nearly 7,000 ft. to avoid the advancing river, which was eroding its bank despite protective measures. In 1922 the same length of line had to be thrown back another 300 ft., and in 1928 it was again decided to retire still farther rather than spend money on protection works of doubtful value. Once more in 1940 it became necessary to build a new diversion 7,640 ft. in length, a work necessitating the removal of some 17,000 cu. yd. of earth by dragline dredger. To effect a rapid change-over and insure a stable formation the new embankment was consolidated by rolling. An article elsewhere in this issue describes the routine measures that have to be taken by the maintenance engineers of the Eastern Bengal Railway to combat two of the great rivers in Bengal. The article is based mainly on reminiscences, but apart from the fact that one or more of the riverine stations mentioned may have since been closed and others opened, the procedure necessary to cope with the many and widely changing river channels must remain much the same today.

Deep Tunnel Shelters at Newcastle

In Newcastle-upon-Tyne, the City Engineer has devoted considerable attention to the provision of deep-level air raid shelters, and the article at page 115 of this issue gives some details of the structural work whereby a disused colliery railway tunnel has been converted successfully to this use. An attempt was also made to use an old colliery working as a deep shelter, but a large fault, falls of coal or rock, and other obstacles caused the scheme to be abandoned. A cliff has been tunnelled to provide a safe A.R.P. Control Centre, and the Ouseburn Culvert, with from 80 ft. to 100 ft. cover over it, has been adapted as another deep shelter. Its minimum size is 24 ft. wide by 17 ft. high, and its length is 1,800 ft. A reinforced-concrete platform supported on continuous r.c. walls was constructed throughout this length, sufficiently high above the bottom of the culvert to be well above flood level. This shelter originally seated 3,500 persons, but, on the advice of the Minister of Health, it was later converted to a dormitory with bunks, accommodating considerably fewer; a canteen, Medical Aid Post, and other conveniences were added. A fracture in the arch of the culvert has more recently necessitated closing a portion of this shelter, but the old mineral railway continues to provide an important part of the Newcastle public shelter.

Swedish Bomb-Proof Motor Works

The vulnerability to aerial attack of large assembly plants, with resultant disorganisation of the war effort, has caused many of the belligerent countries to arrange essential plants in caves and tunnels, and, although some of these have been illustrated in the press, the precise locations and layout details are naturally not revealed. Recently, one of the few remaining neutrals has taken a similar step, and a large plant blasted out of solid rock has been completed at Eskilstuna, Sweden, by AB. Bolinder-Munktell for the manufacture of road motors, diesel tractors, heavy marine and stationary oil engines, diesel engines, threshing machines, and similar equipment. Because of its solid rock construction, the factory is practically bomb proof. In addition, should it be necessary, the factory can be sealed completely to protect the workers from poison-gas attacks. In case of fire, it can be evacuated and closed tightly, thus shutting off the oxygen supply and smothering the fire. The interior of the plant is stated to be spacious and well ventilated. The machinery has been painted a light colour, and the rock walls are lined with light-tinted wallboard. Although all illumination is from electric "daylight" lamps, an illusion of windows has been created by cutting and cleverly decorating rectangular niches in the walls. Another feature is a specially-built broadcasting plant which provides gramophone music during working hours. Water is obtained from a deep well in the rock floor, and fresh filtered air of regulated temperature and humidity is supplied by an air-conditioning system. Only a small quantity of fuel is required to heat this cave factory, as rock provides excellent insulation, and, without artificial heat, the temperature would remain at about 42° F., regardless of the outdoor temperature. The heat generated by the operation of the machines, ovens, and electrical installations is sufficient to raise this to approximately 65°, even during winter weather. In the summer it is necessary at times to cool the subterranean plant with electric fans. The construction costs of this factory are said to be not greatly in excess of those of an ordinary building, and maintenance costs should be less.

Indian Railway Materials for Overseas

Some idea of the quantity of railway material that is being sent overseas for military purposes from India may be gathered from the fact that, as long ago as March last, orders completed or in hand were valued at over Rs. 8 crores (£6,000,000). Practically all this material, apart from rails and locomotives, is being turned out from railway workshops, the capacity of which is being steadily increased to meet the rising demand for rolling stock, fabricated track components such as points and crossings, and girder work for bridges, turntables, and other structures. Many hundreds of miles of track both new and dismantled from unprofitable branch lines that have been closed, as well as some from stock, have been shipped from Indian ports. In a single week, orders for railway stores to the value of Rs. 1½ crores (£1,125,000) were placed with railway shops for supply to the Middle and Near East, according to *Indian Engineering*. Broad gauge coaches are being converted to form hospital trains running on 4 ft. 8½ in. gauge bogies, and metre gauge engines and stock are also in demand for military railways.

American Locomotive Defects

The annual report of the Director of the Bureau of Locomotive Inspection, Interstate Commerce Commission, for the fiscal year ended June 30, 1941, states that although the number of accidents, and also that of persons killed and injured, had decreased, there was a small increase in the locomotives which, on inspection, were found defective. All of the eleven boiler explosions that occurred, and which resulted in 11 persons being killed and 29 injured, were caused by overheating of the crown plate due to low water. Four of the explosions were particularly violent; one occurred while the engine was hauling a passenger train at an estimated speed of 50 to 55 m.p.h., and in this case two employees were killed and six injured. The force of the explosion tore the boiler from the frames and hurled it forward 330 ft., where it struck the track, rebounded, again struck the track, and came to rest on its right side in reverse position near the east side of the track. The running mechanism, tender, and first four vehicles of the train were derailed where the boiler first struck, and the track was torn up at this point for a distance of 350 ft.; parts of the wreckage were scattered up to 725 ft. from the point of explosion. In another case three employees were killed in an explosion while the locomotive concerned was hauling a freight train at an estimated speed of 8 m.p.h. Parts of the engine were hauled forward 347 ft. In summing up, the report states that under ordinary conditions results of this kind need not necessarily be particularly alarming, as some variations can be expected from year to year.

Outer Suburban Speed

Although in point of time and speed the Great Northern route from London to Cambridge *via* Hitchin can no longer offer an attractive alternative to the direct line from Liverpool Street, the King's Cross trains have not lost all their former dash. North of Welwyn they mostly submit to the plodding mediocrity of "all stations" schedules, but between there, or Hatfield, and King's Cross the Atlantics usually in charge continue to cut the necessary minutes off schedule to regain any time lost on the stopping section of the journey. Passengers who have joined the trains in the backwoods of Hertfordshire and Cambridgeshire, and who have been extracting a melancholy pleasure in the early stages of the run from the usual dismal prophecies of a late arrival and missed connections, brighten visibly when Potters Bar is passed and rapid acceleration suggests that they may be on time after all. On recent journeys we must confess to enjoying the sensations of speed and determination to get the better of the clock instead of making accurate observations of performance, but we think that if the L.N.E.R. authorities could sometimes overhear the spontaneoous expressions of approval when the trains draw into King's Cross a minute or so before time, they would be more gratified than by any tabulation of figures on our part.

Sir Alan Mount's Annual Report

THE annual report for 1941, presented to the Minister of War Transport by Lt.-Colonel Sir Alan Mount, Chief Inspecting Officer of Railways, is once more in the abbreviated form introduced in 1940 and the information it contains is based on the method of reporting accidents and casualties introduced as an emergency war measure and designed to simplify the work entailed. As only accidents involving "serious" damage to rolling stock or injury to persons, as defined by the Railways (Notice of Accidents) Modification Order (Statutory Rules & Orders, 1939, No. 1214), effective as from September 1, 1939, are now reportable, a direct comparison with pre-war years is possible only in the matter of fatalities. The previous report covered a period in which constant air raids on a considerable scale were adding to the anxieties of the railway staffs. The present document, although not dealing with quite so troublesome a time in that respect, is concerned with other difficulties, in the shape of loss of staff, increased traffics over routes not normally accommodating them and various restrictions arising out of war conditions, all of which combine to add to the railwayman's task. It is gratifying to read that in spite of every disadvantage "a high standard of safety was generally maintained."

Causes	Type of accident					Totals
	Collisions	Derailments	Running into obstructions	Fires in trains	Miscellaneous	
1. Failure of train crew (including guard) :—						
(a) Passing signals at danger	22 (32)	8 (16)	— (—)	— (—)	— (—)	30 (48)
(b) Other irregularities or want of care	15 (17)	39 (25)	— (—)	— (—)	— (—)	54 (42)
2. Failure of signalman :—						
(a) Irregular block working	11 (9)	— (—)	— (—)	— (—)	— (—)	11 (9)
(b) Other irregularities or want of care	16 (18)	9 (22)	— (—)	— (—)	1 (—)	26 (40)
3. Failure of crew and/or signalman and/or other staff	15 (10)	13 (5)	— (—)	— (—)	1 (—)	29 (15)
4. Failure of other staff in operating departments (excluding faulty loading (see 10 below))	2 (2)	5 (2)	— (3)	— (—)	— (—)	7 (7)
5. Accidental	5 (—)	1 (5)	2 (3)	— (—)	— (—)	8 (8)
6. Defective draw gear	14 (18)	19 (22)	— (—)	— (—)	— (—)	33 (40)
7. Defective stock other than draw gear	— (—)	28 (13)	— (—)	— (—)	— (1)	28 (14)
8. Defective engines	— (—)	3 (5)	— (—)	— (—)	— (—)	3 (5)
9. Defective track and/or signalling apparatus	1 (—)	14 (8)	— (—)	— (—)	— (—)	15 (8)
10. Faulty loading	— (—)	13 (13)	— (—)	— (—)	— (—)	13 (13)
11. Due to snow, landslides, flooding, etc.	— (—)	17 (2)	37 (3)	— (—)	— (—)	54 (5)
12. Miscellaneous	4 (2)	23 (14)	5 (5)	1 (1)	— (—)	33 (22)
Totals	105 (108)	192 (152)	44 (14)	1 (1)	2 (1)	344 (276)

In train accidents 50 passengers and 7 servants were killed and 19 other persons, compared with 40, 8, and 2 respectively in 1940; the figures for seriously injured were 62 passengers, 16 servants, and 15 other persons, compared with 46, 12, and 3 respectively in 1940. The figures relating to other persons were exceptionally increased by the fall of a British aircraft on Blackpool station on August 27, 1941, when a fire was caused and traffic was suspended for 5½ hr. Although this has to be classed as a train accident it was not one in the more usual sense of the term. Of the six train accidents made the subject of the ordinary formal inquiry several presented points of special interest. In the collision between Harold Wood and Brentwood on February 10, 1941, when seven lives were lost, a driver became drowsy and failed to see caution and stop colour-light indications, in full view, protecting a train stalled through loss of steam. The head-on collision at a crossover junction at Dolphin Junction, Slough, on July 2, 1941, arose from a breach of block regulations, when the signalman failed to make sure that one of the trains had come to a stand before permitting the other to cross over. Five lives were lost. Another and much more serious collision at a crossover junction, involving 23 fatalities, took place at Eccles on December 30, 1941. There was dense fog and a train was mistakenly accepted to an outer home signal with no fogman at the distant signal. These signals were over-run at speed, as a result of want of care and prudence on the footplate. In all three cases the question of automatic train control arose, although at Slough there was a possibility that signals were restored after a clear distant indication had been seen. A colour-light distant probably would have been effective at Eccles and it was made known that the L.M.S.R. is renewing all distants on important routes as colour lights, as opportunity serves. Another block-working failure, this time at a simple intermediate block post, caused the collision at Holmes Chapel on September 14, 1941, when nine fatalities occurred. Attention was directed by it to the inadvisability of a man of comparatively short service being kept regularly on monotonous night duty. An unusual accident of much engineering interest was that between Ratcliffe and Kegworth on January 12, 1941, when an intermediate boiler tube on a Garratt-type engine collapsed, and the driver and fireman were fatally scalded. The tube had wasted round its entire circumference on the water side close to the firebox tube plate and only withdrawal of the tube could have enabled this to be detected. Pin holes usually develop in tubes that are becoming thin in this way and serve to give warning. The failure was an exceptional one and there were no grounds for finding fault with existing methods of examination, but it was decided that in future a definite number of intermediate tubes shall be withdrawn. On April 28, 1941, a fire broke out in a coach of a train travelling near Westborough, occupied by a number of boys returning to school. Three vehicles were eventually burnt out and six of the boys lost their lives. They had been throwing lighted matches about and fire had been started in an inaccessible place between a seat and the side of the coach. Some modification in regulations affecting the locking of gangway doors resulted from this case. In addition, other accidents were dealt with by officers of the Ministry without an ordinary inquiry being called for.

The report includes a new and instructive table setting out the causes of the various cases, which we reproduce below; the 1940 figures are shown in brackets:—

Failure of the human element accounted for 157 accidents compared with 161 in 1940, mechanical failures of rolling stock and engines for 64 as against 59, and defective track or signalling apparatus for 15 as against 8. Although the men are necessarily more accustomed than they were to the special conditions and limitations imposed by the war, their effect is still operative and this, with certain difficulties arising from the continuance of hostilities, calls for special care in the performance of many duties. This being so we are justified in feeling satisfaction at the results of the year's working, which has been conducted with traditional freedom from much serious mishap. Little comment is necessary on the subject of level-crossing accidents. As in 1940, no passenger was killed or seriously injured as a consequence of one. The number and classification of crossings remains as before. There were 77 serious casualties caused by 65 accidents, compared with 50 and 47 in 1940. Forty-six pedestrians were involved, of whom 41 were killed. Seven military personnel were killed or seriously injured and attention has again been specially drawn to the need for care by military drivers.

In the case of movement and non-movement accidents we read that 316 inquiries were held into cases involving fatality or serious injury to 327 persons, nearly all railway servants; the remainder were principally contractors' servants and persons at work or transacting business on railway premises. Of the 88 recommendations made, 69 were adopted, 17 not adopted, and 2 are still under consideration. Movement accidents to passengers were mainly due to misadventure, want of caution, or misconduct. There was an increase from 28 to 32 in the number of fatalities due to attempting to enter or leave trains, and it is surprising that the number is so few, in view of the risks one sees taken daily. Generally there was little change in the accidents in this class involving passengers, but more interest is presented by the accidents to servants and contractors' men whilst working on the permanent way. The casualties among men struck while working on the line were the same, 77, as in 1940, with a slight increase in the number of accidents. Practically all cases of men coming to harm are still being reported and comparison with earlier years is little affected by the present regulations. The 12 casualties attributable to inadequate protection arose from 10 instances of failure to appoint a lookout man. The proportion of casualties arising from snow conditions is still unduly high, having consideration to the comparatively short duration of snow periods, and there appears to be, Sir Alan considers, a need for

better pre-arranged plans for dealing with these emergencies, liable to create such a heavy demand on manpower that the usual safeguards cannot always be provided. The casualties under lookout men at fault were slightly higher than usual, and there were still regrettable cases of failure to act correctly after warning had been given and heard. There was a slight improvement in cases due to want of individual care; there were 39 casualties against 45 in 1940, but failure in this respect in places where a lookout man should not have been necessary accounted for half the casualties to men working on the line through being struck by engines or trains.

The report states that "the safety of men working on the permanent way continues to receive close attention and every accident has been the subject of an inquiry. The higher proportion of fatalities in 1941 as compared with recent years is regrettable, but it does not necessarily indicate additional carelessness." The report points out that 69 per cent. of the 1941 casualties were attributable to want of care, a slight improvement over the 73 per cent. figure for 1940, and again stresses the vital importance of paying the strictest attention to Rule 234(*a*). After alluding to a serious accident at Stafford, Sir Alan observes that "it is difficult to suggest new means to counteract such momentary thoughtlessness and disobedience to safety rules; they undue to *all movement on rail*, with our usual additional columns for purposes of comparison. The liability to casualty to passengers in train accidents during the year was one killed in some 26·6 millions carried. The heavier death roll from such accidents was partly due, the report states, to heavier loading of the reduced number of trains, greater length of journeys and an increase of 5 per cent. in the passengers carried by main-line companies, compared with 1940. The rise and fall in the annual averages since the last war is shown by the following figures:—

KILLED IN TRAIN ACCIDENTS

1920-24	25	Annual averages
1925-29	38	
1930-34	25	
1935-39	39	
1940	50	
1941	76	

(The figure for 1935-39 would have been 38 but for accidents at Bletchley and Hindley, which occurred after war began. The figure for 1941 includes the fatalities caused when an aircraft fell on Blackpool station.

"When considering the subject of human failure," states the report, "fatigue is an important element; also heavy traffic and less experienced staff. But it would appear that blackout and

Annual average 1925-1929		Annual average 1930-1934		Annual average 1935-1939		Particulars	Year 1940		Year 1941	
941		796		746		Accidents to trains	276 (serious damage only)		344 (serious damage only)	
9,141		5,772		4,149		Accidents to, or failures of, rolling stock or permanent way	115 (serious damage only)		166 (serious damage only)	
K.	I.	K.	I.	K.	I.	Casualties:—	K.	I.	K.	I.
91	3,733	74	4,394	86	5,342	Passengers	140	255 (seriously only)	154	271
210	3,267	183	2,592	198	2,576	Servants	248	424 (seriously only)	271	468
67	158	51	146	54	120	Other persons	65	24 (seriously only)	109	43
368	7,158	308	7,132	338	8,038	Totals	453	703	534	782
1,661		1,612		1,704		Passenger journeys originating, excluding free conveyance (millions):—				
						Railway companies	927·8		980·9	
						L.P.T.B.	373·0		351·4	
401·3		416·2		443·3		Passenger and freight train mileage (millions):—				
						Railway companies	354·2		351·7	
						L.P.T.B.	26·1		25·1	
680,197		603,621		593,741		Companies' servants employed (March)	589,880*		589,880*	
122·6		112·6		114·3		Shunting mileage (millions)	121·8		121·1	
29·0		26·8		29·4		Light engine mileage (millions)	35·1		35·4	
						All casualties per million train miles:—				
0·9		0·7		0·7		Killed	1·2		1·4	
18		17		18		Injured	1·8 (seriously only)		2·1 (seriously only)	

* Figures for 1939, the latest published

doubtedly account for the majority of these accidents and prevention rests primarily with the individual. . . The encouragement of individual sense of responsibility is of great importance and much can still be done, particularly in view of wartime conditions of recruitment, by inspectors and gangers by means of advice and, above all, by example. The propaganda effect also of disseminating information as to the circumstances which have led up to accidents has not yet been fully developed." Most of the accidents to men walking or standing on the line, or when proceeding to or from work, were also due to lack of individual caution. There was an increase in the figures, which already compared badly with those for 1930-34 and 1935-39 five-year periods, but blackout conditions are thought to have influenced results in 8 only of the 35 fatalities—out of a total of 87—which occurred during darkness. Shunting accidents caused 58 fatalities, compared with 60 in 1940, and 32 and 39 for the five-year periods just mentioned. There was an improvement in the case of fatalities due to standing and stepping foul of vehicles, but an increase in those caused by braking, scotching, joining, or leaving vehicles, and riding on engine footsteps. Fatalities from coupling accidents decreased from 7 to 5. Altogether 52 inquiries were held into these movement accidents, the total casualties from which numbered 58 killed and 216 seriously injured; 77 occurred during darkness. Restricted lighting had contributory effect on 10 per cent. of the cases. Otherwise want of care and disregard of simple instructions were the principal causes. Three women employees lost their lives and five were seriously injured in movement accidents. Only in one accident, where women porters were taking a barrow across some lines, was restricted lighting considered to be contributory.

Above we reproduce the table in the report covering accidents

war conditions generally are contributory factors of at least equal importance. Trains running out of course, the operation of many specials, conveyance of exceptional loads, and abnormal weather, all imposed a greater strain on operating staff, accentuated by an unusually heavy sick list." In spite of this, however, we read that "the incidence of accident has not been materially affected up to now by track, rolling stock and signal maintenance difficulties: for this great credit is due to the departments concerned."

Sir Alan concludes his review of the year as follows:—"As regards passengers in movement accidents, when alighting from trains, and falling from platforms and being struck by trains, the figures materially exceed those of pre-war. This is to be expected but the chief remedy is greater care on the part of passengers themselves. Publicity is being intensified by notices on the inside of carriage doors, by loud speaker warnings and by propaganda generally. Everything possible is being done to assist in improving operating efficiency and safety within the limits that war conditions prescribe. As regards casualties to servants due to restricted lighting, there was evidence of improvement; this may be the outcome of experiments which have been, and are still being, carried out to reduce difficulties in working during the blackout. In certain instances it has been found possible to provide additional lighting of low intensity without undue risk in marshalling yards, etc.; and I hope this improvement may be extended.

"There was a noteworthy increase in the number of women employed during the year, and they are engaged in a large variety of occupations. They have proved themselves readily adaptable to their new duties and are responsive to instructions intended for their personal safety."

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Southern Railway Mixed Traffic Electric Locomotive

Room 1448, 466, Lexington Avenue,
New York
May 27

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In the illustrated article "Southern Railway Mixed Traffic Electric Locomotive," on page 117 of your January 23 issue, occurs the following reference to what seems to be an interesting and important innovation:

> A novel feature embodied in the design of the electrical equipment enables the locomotive to continue exerting a drawbar pull when passing over the unavoidable gaps in the conductor rail which occur at junctions and crossings when none of the collector shoes may be in contact with the conductor rail.

The second line of the title ("Maintains drawbar pull when passing over conductor rail gaps") also implies that that is the principal feature of the locomotive. But no description of this feature is to be found in the article, not even a hint at its character.

Two months later, in your March 20 issue, on page 414, the Chairman of the Southern Railway Company, speaking at the annual meeting, is quoted as saying that initiating the hauling of trains by electric locomotive "involved the design of an electric locomotive that would work satisfactorily over the gaps in the conductor inherent in the third rail system. Our Chief Electrical Engineer has shown marked ability in solving this difficult problem," but he is equally non-informative as to the character of the solution.

Having whetted the curiosity of your readers by these two mysterious references, will you not satisfy it by a note in an early issue describing the device and its action?

Yours very truly,
ROBT. S. RHODES

[It is hoped to publish a more complete account of this most interesting electric locomotive in a future issue.—ED., *R.G.*]

Public Relations

Hitchin, Herts
July 20

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your editorial reviewing the admirable public relations organisation of the London Passenger Transport Board in your issue of July 17 ends with the question "Has any other Public Relations Department of a railway administration so complete a system for classifying all points of contact with the public?"

As one who has studied the science of railway public relations both in theory and in practice for some years, I would hazard the guess that nowhere in the world, the United States included, does any railway administration possess a public relations organisation so logical and so comprehensive as that of London Transport. And, for that matter, do any of our Government departments which, above all others, should always be in a position to assess public opinion, possess a comparable public relations organisation?

Perhaps the most sincere tribute I can pay to London Transport is to say that its public relations organisation is the envy of many home and overseas railway officials whose duties lie in this sphere, however efficient, if perhaps loosely knit, their own organisations may be.

In my view, the reasons why the public relations organisations of our railways have not yet reached the stage of evolution attained by that of London Transport are not far to seek. First, it is one of the youngest, if not the youngest, of all railway departments, and the idea that the public relations department should handle all public requests, complaints, suggestions, and inquiries would be frowned upon by many railway officers.

In the second place, evolution is not only handicapped by tradition and status but by geographical considerations as well. There are undoubtedly many who will agree with the necessity for the public relations organisation established by London Transport, but argue that what is good for a compact densely-populated area such as London is unworkable for the widespread areas covered by the main-line railways.

The answer to that is that the greater the ramifications the more vital is the need to assess public opinion, and, if a commercial, operating, or technical department can be successfully decentralised to work on a regional or divisional basis, then why should not the public relations department function likewise?

One thing, however, is certain. Any public relations organisation must form an integral part of the General Manager's own office if it is to act as an efficient official mouthpiece of the railway as a whole. Furthermore, its personnel should be comprised of suitably qualified men who, having spent most or the whole of their careers on the railway, will understand its own special problems far better than "experts" recruited from outside the service.

Yours faithfully,
GEORGE DOW

[Mr. George Dow, although writing unofficially, is Information Agent of the L.N.E.R., and a member of the R.E.C. Publicity Committee.—ED., *R.G.*]

Standard Station Signs

Southern Railway,
General Manager's Office,
Waterloo Station, S.E.1.
July 21

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In your issue of July 17, an editorial appeared with regard to the above. I have often wondered at the amount of railway knowledge centred in your offices, but the ignorance displayed in this article is quite astonishing. It is quite true the London Transport Board have completed the whole of their arrangements with regard to station name signs, but I venture to suggest that the Southern Railway have more stations equipped with all the suggestions made in your article than the rest of the main-line companies put together. At the suggestion of Sir Herbert Walker the board passed a considerable sum of money for the modernisation of Southern Railway stations, and in this connection station signs and notices of all descriptions were put through special experiments resulting in full standardisation in 1935.

No less than 445 stations had been dealt with so far as standard signs in standard lettering, mass produced, were concerned, and staggering of such signs was the general practice. I enclose a photo of Surbiton showing how the standard lamp signs with their distinguishing ring in green and white enamel are specially placed so as to catch the platform lights, and it is usually possible to see more than one of these from any carriage window. In this same photo you will see standard "Ladies' Waiting Room," "Waiting Room" notices, and the indication to the driver of electric trains where to stop short trains, all are shown. In the photo of Southampton, admittedly rather far from the camera, can be seen staggering of signs, six different signs showing from one point without obscuring each other.

The number of standard station lamp signs used to be ordered *en bloc* for each station, but signs for "Ladies' Waiting Rooms," "Refreshment Rooms," "Lavatories," etc., were ordered several hundred at a time, by which means great economy was effected and standardisation throughout the whole of the system was achieved. This, as you will appreciate, helped replacements.

It would appear that your writer cannot have travelled much on the Southern or else he would have seen these improvements which were advanced during the few years before the war. Possibly the fault lay in the fact that the Publicity Department overlooked advertising themselves!

Yours sincerely,
C. GRASEMANN,
Public Relations & Advertising Officer

[The photographs referred to in Mr. Grasemann's letter are reproduced on p. 112. The writer of the editorial article in our July 17 issue states that the specific mention of the L.M.S.R. arose from the fact that this company before the war had substituted station nameboards of a new and distinctive standard type for the existing nameboards at stations *all over its system*. It was not intended to be any reflection on the improvements effected at a number of stations on the Southern and L.N.E.R. It is quite true that the ordinary vocation of the writer of the editorial causes him to travel more on the northern lines than on the Southern.—ED., *R.G.*]

CONTROL OF BALL AND ROLLER BEARINGS.—To secure the most equitable distribution for production usage of ball and roller bearings and to prevent overstocking of such bearings, the Ministry of Supply has issued an Order which came into force on July 22, controlling the acquisition and stocking of bearings. The Order, the Control of Ball and Roller Bearings (No. 2) Order, 1942, is obtainable, price 1d., from H.M. Stationery Office, or through any bookseller.

The Scrap Heap

One of the L.M.S.R. works has just completed its millionth "stamping" produced for war purposes. Sir William Wood, President of the railway, in a message to the workers said: "I very warmly congratulate the shop on this great achievement."

* * *

The first murder on an English railway was on the North London Railway, near Hackney Wick, in 1864: Franz Muller murdered Mr. Briggs. Muller fled to New York, was traced by the police, brought back, tried, and executed.—*From "Whitaker's Almanack."*

* * * *

THE TENDER EEL

The news that the many thousand tons of formerly unwanted and unsightly dumps of sludge from the railways' water softening and purification plants have now turned out to be a valuable fertiliser brings to mind (declares a correspondent) the curious fact that up to the 1850's the only purification of countryside water for use in railway engines was done by a live eel kept in the engine tender. Hardy and voracious, Egbert, Eric, or 'Erbert—call him what you will—had the extremely congenial task of doing nothing but eat all day, consuming in the course of such an enviable existence all the minute animal life and particles of vegetable matter present in the water, thus prolonging the life of the engine's "innards." Victorian engine-drivers were said to have had what one might reasonably term a tender spot for their particular eels, but nevertheless there were so many mysterious disappearances of eels from tenders that one is forced to the conclusion that by the very nature of their upbringing they often proved too tender for their hungry owners. —*From "The Manchester Guardian."*

* * *

U.S.A. SCHOOLGIRL HEROINE

Sixty-one years ago a girl of 15 named Kate Shelly saved the lives of 600 passengers travelling in a Chicago & North-Western Railway train. During the night of July 6, 1881, Kate Shelly fought her way through storm and flood to the station at Moingona, Iowa, to give warning of the destruction of Honey Creek Bridge over which the train was due to pass. Kate's reward was a collection of gifts, foremost of them a purse from the grateful passengers. Iowa State awarded her a gold medal and $5,000; and the railway company gave her $100, half a barrel of flour, and half a load of coal. Later the company engaged Kate Shelly as Station Agent at Moingona. A monument was erected in Dubuque, poems were written about her, and a $500 mortgage on her father's farm was paid by public donations. Her bravery was printed in a reader used in public schools, and her lantern is now preserved in the State Historical Library at Des Moines. Kate Shelly died in 1912 at the age of 46.

* * *

In July, 1917—exactly 25 years ago—the London General Omnibus Co. Ltd., and its associated companies, announced the withdrawal of ½d. fares and fares of ½d. denominations.

* * *

MAÑANA

According to "Whitaker's Almanack" for 1942, the world's slowest train is one which operates over the 110 miles between Corrientes and Mburucuyá (Ferrocarril Economico Correntino, Argentina) on a schedule of 13 hr. 10 min. It is said to be practically unknown for the train to get in on time, and it is usually some hours late.

* * *

CANNY COMMITTEE MAN

This is said to have been heard on a platform towards the end of June at a railway station that shall be unnamed. Passenger leaving a carriage encounters a friend with fairly heavy bag about to enter. "Where ta bound, Joe? I thought thy holidays were not till t' Wakes." "No more they are," returns Joe, with a grin and a wink. "But A'm tekking mine now, see. A'm on t' committee for 'Stay at Home Holidays' when t' Wakes come."—*From "The Manchester Guardian."*

* * *

To afford some kind of conception of how much replacing the Germans will have to do, here are absolutely reliable figures from a different but equally trustworthy Nazi source, on the situation in the locomotive industry. At the beginning of the Russian war, Germany possessed a total of 11,000 locomotives (the figure does not include between 5,000 and 6,000 switch-engines). Around 4,000 of these were taken from Germany and sent to Poland and Russia for the Russian campaign. As they were destroyed or had to be returned to termini for repairs, the remaining stock of 7,000 had to be largely drawn away from the home front to replace them. My source declared that by the time the winter set in on the Eastern front, a total of 4,000 locomotives—equal to the original total used in the East—had been destroyed beyond hope of repair by the sabotage of partisans and by bombing and artillery fire at the front. An average of 20 locomotives lost per day! If all these have been replaced by drawing from Germany itself, it means that only 3,000 of an original 11,000 locomotives are available for transport of all kinds inside Germany. He said, further, that production of locomotives by all the industries under German control—German, French, and Belgian factories—has dropped to 1,400 a year (he refused to give the original production figure, but said this marked a definite and large falling off from the total production of all these factories in past years). This means that three years' production of locomotives was destroyed in about six months of fighting in Russia. Of all the industrial problems facing the Nazis, my source declared, rail transport was by far the most acute.—*Extract from "Last Train from Berlin," by Howard Smith.*

* * *

YOU'VE SAID A MOUTHFUL

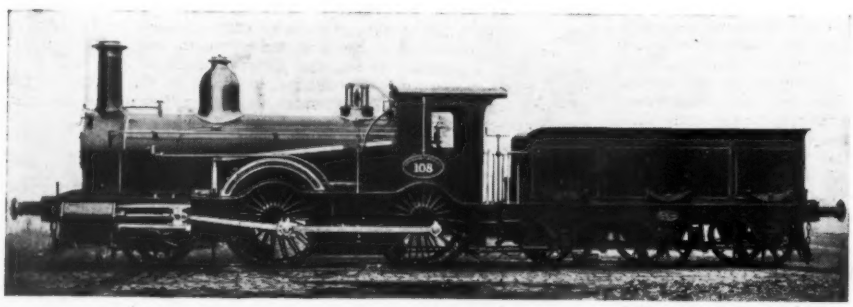
Announcers on the public address system at London Bridge often have a little time to spare in which to give details of the various destinations which may be reached by changing at Sevenoaks. Rarely does it happen that all these are mentioned, but on a recent occasion the following pronouncement was successfully delivered. "The train running into platform 3 will call at Petts Wood, Orpington, Chelsfield, Knockholt, Dunton Green and Sevenoaks. Change at Dunton Green for Chevening, Brasted, and Westerham. Change at Sevenoaks for Hildenborough, Tonbridge, Paddock Wood, Yalding, Wateringbury, East Farleigh, Tovil, Maidstone West, Horsmonden, Goudhurst, Cranbrook, Hawkhurst, Ashford, Smeeth, Westenhanger, Sandling Junction, Shorncliffe, Folkestone, Dover, Martin Mill, Walmer, Deal, Sandwich, Canterbury West, Minster, Ramsgate, Dumpton Park, Broadstairs, Margate, Ham Street, Appledore, Lydd, Greatstone, New Romney, Rye, and Winchelsea." This ordinary eight-car train of non-corridor suburban stock therefore serves as a feeder to no fewer than ten other services, though it must be admitted that long-distance passengers, who evidently prefer to entrain at Cannon Street, form a small proportion of the normal complement.—*Extract from a letter to our associated contemporary, "The Railway Magazine."*

SMILING THROUGH . . . *By LEE*

[No. 2,348] MORE COMPLACENCY

"There you are—the old 9.2 on time again. 'Ow do they expect the public to know there's a war on?"

[*From the "Evening News"*



2-4-0 locomotive built in 1872, by Beyer, Peacock & Co. Ltd., for the Dutch State Railway

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Electrical Department Organisation

The Electrical Department, South African Railways & Harbours, has been established as a separate department of the administration, under the control of the Chief Electrical Engineer, who will be responsible to the General Manager for the whole of the electrical, telegraph, telephone, and lighthouse undertakings in the Union and South West Africa.

Rent Rebate Scheme

The principles of the rent rebate scheme, agreed between the administration and the staff associations (referred to in our February 14, 1938, issue), have been amended as far as they apply to unmarried servants who support dependants. To be eligible for rent rebate, such servants must be maintaining a home for the benefit of themselves and their dependants, and must be supporting at least one full or partial dependant earning £10 a month or less. Any income received by the family in excess of £3 15s. a month will be combined with the substantive emoluments of the applicant for the purpose of calculating the rent rebate payable to the latter. Old-age and other Government pensions, up to the maximum of £3 15s. a month, received by dependant parents of applicants will be disregarded. An unmarried applicant, resident on his own property, or on a property registered in the name of a dependant who has no income, the applicant having accepted responsibility for all payments on the property, will be considered for the payment of rent rebate on the basis of the assessed rental valuation of the property. All other general principles of the scheme as applicable to married servants will apply to unmarried applicants.

CANADA

Café Cars for C.N.R.

A new type of dining car, to be known as a café car, will appear in service shortly on the Canadian National Railways. These coaches, which are of all-steel construction, have a kitchen and pantry in the centre, on each side of which is a dining compartment with seating capacity for 20. In place of the normal dining-car seating arrangements, there are settees along the side walls, with tables, each for two persons, in front, and the centre of the floor is left clear. Their use is intended to be largely on trains patronised by coach passengers, and they are being introduced to cope with increasing demands. They seat a greater number of passengers than the standard dining car, and their interior layout should enable a quicker service to be maintained. Meals will provide for a wide variety of food and include the serving of joints, but special orders will be discouraged.

Canadian Railways and the War

Mr. R. C. Vaughan, President of the Canadian National Railways, stated in Toronto recently that, although the Canadian railways were handling the largest volume of traffic in their history, they could deal with more goods traffic without difficulty. The general increase in the volume was about 20 per cent. more than that handled by the railways during the peak year of the last war. He said that not only could they take today more traffic, but that they could do so with proportionately less expense than was possible in 1928. The railways represented Canada's biggest war industry, and they were geared to their highest speed; more powerful locomotives, enabling greater loads to be operated at higher speeds, new storage yards, and new systems of traffic control were among the latest improvements. Mr. Vaughan went on to say that, virtually, the number of goods wagons hauled today commenced where the peak loads of the last war finished; and that passenger traffic was proportionately heavy, due both to troop movements and to the transport of munitions workers; he said that, at present, the C.N.R. had over 100 coaches assigned solely to the latter duty. He added that new locomotives, as well as several thousand goods wagons, were on order.

Co-operation between Railways

Mr. W. M. Neal, who lately was appointed Vice-President of the Canadian National Railways, forecast closer co-operation in the future between Canadian railways, in an address to the Winnipeg Board of Trade recently. He said that, particularly in the period of readjustment after the war, the railways would be working even more closely together than at present.

UNITED STATES

Marshalling Mixed Trains in Montana

During the 27th session of the Montana State Legislature, an attempt was made by the railway companies serving that State to obtain the repeal of a Montana law, passed in 1895 and recodified in 1907, 1921, and 1935, which provides that if freight cars are handled in passenger trains, they must be marshalled between the locomotive and the passenger stock—a reversal of the customary British practice with mixed trains. As an illustration of the effect of such an enactment, a train which leaves Kansas City with passenger stock next the engine, and a number of freight cars and a caboose, or guard's brake, in rear, has to have a passenger coach attached next the latter on crossing the Montana border, to which the passengers must be transferred. The railway unions opposed repeal, however, on the ground of the danger incurred by the staffs operating trains on the heavy grades in Montana, should freight stock on the rear of a train break loose, and they won their case. A bill, promoted by the unions, for the standardisation of the size and equipment of all cabooses in Montana, and for the compulsory provision of electric light, was not carried.

B. & O. RR. Locomotive Conversion

An interesting locomotive experiment has been undertaken by the Baltimore & Ohio Railroad with the modernisation of three of its numerous 2-8-2 freight engines, in order to fit them for the exacting schedules of the present day. In converting No. 4482 from Class "Q-4b" to Class "Q-4c," the 5 ft. 4 in. driving wheels have been increased to 5 ft. 10 in., the cylinders from 26 in. by 32 in. to 26½ in. by 32 in., and the working pressure from 225 to 240 lb. per sq. in.; two later conversions now have 27 in. cylinders and 230 lb. pressure. Tractive force has increased from 63,200 lb. to 65,500 lb. Lubrication and balancing have been improved, and equipment includes Baker valve-gear, power reversing, and mechanical stoking. An 8-wheel Vanderbilt-type tender has been fitted, with accommodation for 15,000 gal. of water and 32 tons of coal (as compared with 12,000 gal. and 17½ tons previously), and, in addition, a bogie tank car, containing 10,000 gal., is coupled to the rear of the tender, raising the total water capacity to 25,000 gal. The supplies of coal and water are thus equal to those of the largest tenders in use in the U.S.A., and the modified locomotives will be able to operate over considerable distances without refuelling or rewatering.

Pullman Reservations

From May 20 last the Pullman Company ceased to refund, in the event of non-use, the amounts paid by travellers for Pullman seat and berth reservations, unless the passenger prevented from travelling has notified the ticket office of the cancellation in sufficient time for the reservation to be erased from the train diagram, and the space re-sold. The only exception permitted will be that of the passenger prevented by the late arrival of a connection from occupying space that he has reserved. Last year the Pullman Company reimbursed some 33,000 passengers, to the extent of $244,800, for unused seat and berth reservations which had not been cancelled, and in many instances the accommodation might have been used by other travellers who, by reason of the reservations, were unable to occupy it. The extent of present-day sleeping-car travel is illustrated by the fact that, since the United States became involved directly in the war, the demand by government officials, business executives, and others for sleeping accommodation between New York and Washington alone has risen to 500 berths nightly, despite the fact that this distance of only 225 miles is covered, by an hourly service of daytime trains, in from 3 hr. 35 min. to 4 hr.

Another Railway Diversion

Contracts have been placed for the deviation of the St. Louis-San Francisco Railway (generally known as the "Frisco Lines") between Liggett and Platter, on the Tulsa-Madill-Dallas line, and also between Lakeside and Mead, on the Madill-Hugo branch, in the state of Oklahoma, necessitated by the construction of the Denison Dam on the Red River. The work is estimated to cost $2,264,440.

SWITZERLAND

Linking the Brünig with the M.O.B.

By the use of specially-designed transporter wagons over the standard-gauge Berne-Loetschberg-Simplon line between Zweisimmen, Spiez, and Interlaken (Ost), freight service on the Montreux-Oberland-Bernois metre-gauge system is linked now directly with the metre-gauge Brünig section of the Swiss Federal Railways, and it is possible to run through wagons between Montreux, the Gruyère district, and Lucerne by this route. Each of the B.L.S. transporter vehicles can accommodate two four-wheel narrow-gauge wagons, and special loading docks at Zweisimmen and Interlaken allow the narrow-gauge wagons to be run directly on to and off the transporters.

Train Service in 1942

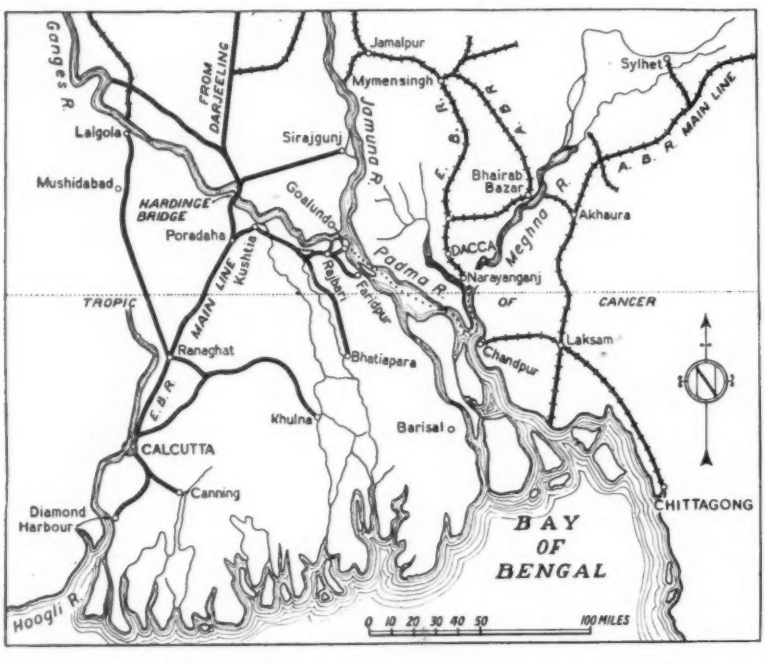
As compared with the normal peacetime service, the average daily mileage of publicly-scheduled passenger trains in Switzerland now has been reduced from 98,680 km. (61,310 miles) to 84,400 km. (52,440 miles). Special and conditional passenger-mileage has been reduced from an average of 4,730 km. (2,940 miles) to 900 km. (560 miles), and the total daily mileage in 1942 is thus 85,300 km. (53,000 miles), as compared with 103,410 km. (64,250 miles) in 1939.

Unusual Railway Engineering Experience

As a result of the uncontrollable might of a river in Bengal, Eastern Bengal Railway* engineers' duties are amphibious, and construction work is practically continuous

By F. S. BOND

IN many countries the railway engineer is accustomed to combat the vagaries of rivers, great or small, that threaten the safety of railway property. Usually, however, he is able to protect it with stone pitching, retaining walls, or revetments, or, in extreme cases, with spur embankments heavily protected with boulders and aprons of the Bell-bund type. In Bengal, however, that great river, the Padma—formed by the confluence of the Ganges and the Jamuna, or lower Brahmaputra, and having a discharge about double that of either—is so vast, and changes its course so rapidly, that any attempt to confine it to a fixed channel, or protect its banks, would be prohibitively costly, if, indeed, such a feat could ever be achieved.



General sketch map of area concerned, showing the main rail and river routes

During the monsoon months of high flood, July to September, it is four or five miles wide, and the farther bank is scarcely visible. The velocities of its currents, too, are very high, and a 100-ft. sounding line often fails to find bottom. It has, moreover, a great tendency to swing from side to side, eroding its soft alluvial banks at an alarming rate, so that any attempt to approach them with a permanent railway is impracticable. Even the lower Ganges at great expense has been trained, with some of the greatest protection works in the East, to allow of its being bridged, but, 30 years after the building of the bridge, this river still causes anxiety from time to time by seriously threatening the guide banks or bridge approaches. How much more then is it impracticable to train the Padma or protect its banks. Nevertheless, a broad-gauge main-line railway has to be carried to the bank of this river and an important inland port, Goalundo, served by heavy mail, passenger, and cargo steamer services, has to be maintained on its right bank by the railway at all seasons of the year. In these circumstances, some reminiscences of railway-maintenance work in this area—even though they date back over 30 years—may be of interest. Some of the riverine stations mentioned may have been replaced by others, but the principal features of the constant fight with the river must always remain unchanged.

Mobile Inland Ports

In order to overcome the difficulty of keeping open for heavy traffic a port on such a river—the nearest navigable channel of which may either move a mile or two away, or, alternatively, engulf all sidings, buildings, and other equipment on its bank within the space of a single flood-season—alternative temporary riverside terminals have to be constructed and maintained. In this way, if one such station site becomes unusable, one, or possibly two, others are available, and each can be moved locally to suit high and low water levels.

The terminus of the Eastern Bengal main broad-gauge line connecting Calcutta with the whole of Eastern Bengal and Lower Assam bears the general name of Goalundo, which is one of the alternative *ghat* or river-bank stations on the Padma, or on the Ganges near its confluence with the former river. To serve these various *ghat* stations, the permanent main line ends at Rajbari, a centrally-situated point well away from immediate danger from these two rivers, as our larger-scale map shows. At Rajbari are situated the locomotive depot and other permanent facilities, and from that station sand-ballasted temporary lines radiate to the *ghats*. In 1908-10 these were situated at Goalundo itself, about nine miles east of Rajbari, and at Durgapur, on the Ganges, four or five miles northwards. A third line ran to Faridpur about 15 miles to the south-east. For many years Faridpur was merely a civil district headquarters situated on a shallow backwater of the Padma, but later when the river swung westwards earlier *ghat* stations became untenable, and the Faridpur channel became navigable, so that an alternative *ghat* station was constructed on it. Subsequently, the river again left Faridpur; the steamer station was about six miles from the town in 1926. In 1931 the river was approaching once more, as the map shows.

Normally, at least two *ghat* stations are maintained, each with from 9 to 15 miles of sand-ballasted track, temporary mat-and-thatch buildings for large transhipment and other staffs, and other equipment, one such station always being in use—sometimes two simultaneously—and another held ready in reserve in case it should be suddenly required. It will be appreciated that the moving of a complete *ghat* station bodily is, therefore, a big job.

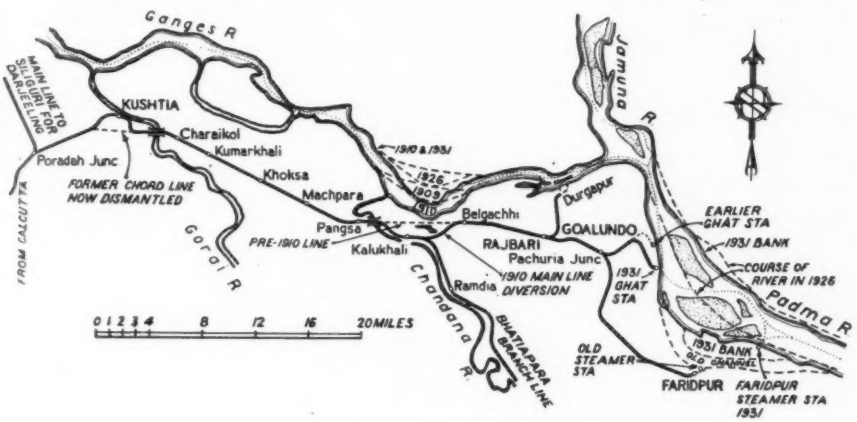
Constant Construction, Soundings, and Charting

Even at each individual *ghat* station whole grids of sidings have to be moved up or down stream, as the water rises and falls, to cater for the steamer traffic as between winter and summer workings; these moves often have to be made twice a year and each usually entails new embankments of great width for the grids. In fact, even when there is no major move to a different *ghat* station, there is almost constant

* The Eastern Bengal and Assam-Bengal Railways mentioned in this article were combined with the taking over of the latter by Government on January 1, 1942, and the amalgamated system is now known as the Bengal & Assam Railway

seasonal construction work in hand at the *ghat* station or stations in use.

Neither these major or minor moves are made haphazard. During the low-water season—and to a lesser degree all the year round—specially trained and reliable gangs of lascars are employed taking daily soundings from boats in the numerous channels near the *ghat* stations. From these soundings they are able to chart the rivers and ascertain where suitable water can be obtained in the near future for the rail-steamer transhipment stations. The charts indicate any tendency of the rivers to move away from the *ghat* stations, or, alternatively, to erode their banks and threaten existing *ghats* during a coming monsoon. The railway engineer on the spot has to spend much of his time superintending the taking of the soundings and preparation of the charts, and his duties are thus amphibious. He relies on the charts to enable him to prepare the coming season's *ghat*.



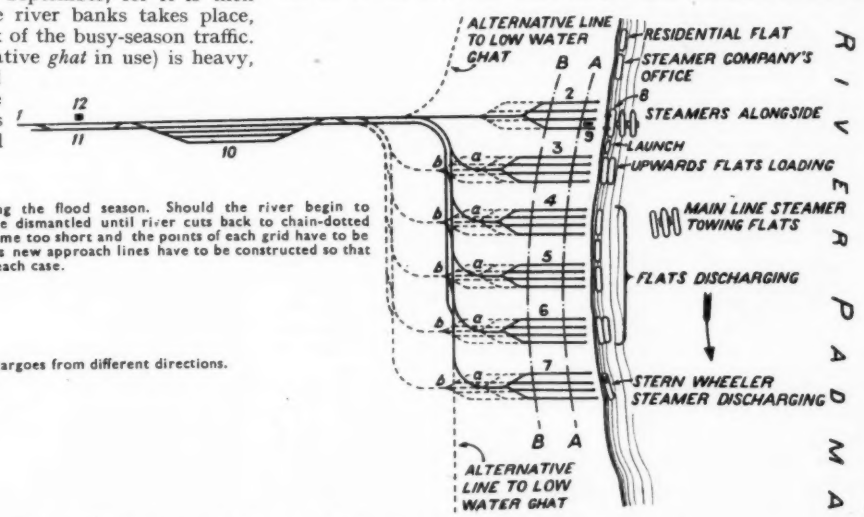
Detail map of the main E.B.R. line from Poradaha to Goalundo, its various "ghat" lines and diversion to suit the changes in the rivers Padma and Ganges, the courses of which in different years are also shown. The main steamer routes are indicated by fine dotted lines. Note the scale in miles and width of rivers

Heavy Transhipment Traffic

His most anxious times, however, are when the flood level begins to fall during August and September, for it is then that the maximum erosion of the river banks takes place, often simultaneously with the peak of the busy-season traffic. Traffic at Goalundo (or the alternative *ghat* in use) is heavy, for it is the broad-gauge terminal on the direct and mail route between Calcutta and such cities as Dacca and Chittagong, and the important jute centre, Narayangunj. The regular daily traffic consists of two up and down mail trains and connecting express steamers—to (*a*) Narayangunj, whence the metre-gauge section of the E.B.R. serves Decca, Tangi (for the Assam-Bengal Railway) and Mymensingh, and (*b*) Chandpur—the riverine terminus of the A.-B.R.—for Chittagong and lower Assam—also several passenger trains each ward traffic increases by several hundreds per cent., and work goes on continuously, day and night, in the transhipment from flat to wagon, of many hundred wagon-loads daily.

River Suddenly Threatens Whole Ghat Station

On one memorable occasion, in the middle of the busy (jute) season, a wire was received in Rajbari about 2 a.m. reporting that the river had suddenly begun to cut or erode its bank at Goalundo *ghat*, where transhipment was in full swing. On arrival there, it was found that the erosion immediately endangered the whole railway property along the river-face. To meet such a contingency, all *ghat* sidings are laid end-on to the river, and are longer than economical traffic working requires, so that work can continue even if several rail lengths have to be dismantled at the river end; the wagons are merely pulled back. If the rate of erosion is very rapid, as it was on that occasion, it is difficult to pull up simultaneously, perhaps a score of immediately-threatened tracks, as well as buffer stops, flood-light standards, and temporary buildings, fast enough to prevent their becoming



Full lines denote tracks normally in use during the flood season. Should the river begin to erode its bank, the river ends of sidings can be dismantled until river cuts back to chain-dotted line A. If it cuts beyond A, the sidings become too short and the points of each grid have to be thrown back to *a*. If further erosion continues new approach lines have to be constructed so that the points can be thrown back farther to *b* in each case.

1—Temporary main line from Rajbari.
2—Passenger ghat.
3—Upwards goods ghat.
4, 5, 6 and 7—Downwards goods ghats for cargoes from different directions.
8—Floating steamer station.
9—Mat and thatch railway booking office.
10—Sorting yard.
11—Receiving lines.
12—Block hut.

Diagram of a typical layout for a "ghat" station on the Padma

engulfed; incidentally, the hundreds of coolies loading the wagons on the sidings, and the disposal of the wagons do not help matters.

In the particular instance, just referred to, the continued erosion quickly made it impossible to carry on traffic working on the rapidly-diminishing sidings, and the wagons had to be moved elsewhere, while new points were laid in as shown on the relevant diagram, and the sidings extended to them. In a short time it became necessary to construct new approach lines also on 3 ft. or 4 ft. embankments, and to throw back the grids bodily. When 300-400 ft. of track and other equipment are in danger of falling into the river in an hour, and heavy transhipment traffic has to be carried on, quick decisions are necessary and everyone concerned is in for long hours of work continuously.

Ganges Outflanks Main Line

As an example of the manner in which even the Ganges oscillates from side to side in this same area, it may be mentioned that the main line approaching Rajbari runs parallel to this river for some 35 miles, and, as constructed in the early 70's, was kept at what was considered a reasonably safe distance from the former general course of the river. About 1909, however, the Ganges began to swing southwards as indicated on the larger-scale map, and in one flood season the main stream cut away its right bank almost up to the railway; the distance cut back during these four months was some 6,000 ft., or well over a mile, measured at right angles to the railway or to the general course of the river. Consequently a diversion of the line nearly seven miles in length—involving the abandonment of Kalukhali station and the building of a new one on the diversion—which has subsequently become a junction—had to be undertaken at short notice and completed before the next flood season. As this involved long lengths of high embankment and a number of bridges, there was none too much time, especially as the new alignment ran through valuable cultivated land, possession of which took several weeks to arrange. This episode is mentioned in passing as a not uncommon emergency in the vicinity of these rivers.

Destructive Cyclone

Another, though luckily rare, source of anxiety to the railway and steamer staffs, is the sudden cylone that occasionally hits these *ghat* stations without warning. At Goalundo two steamer companies have (or had) their operational headquarters, and their staffs lived, on residential flats, or house-boats. The railway staff had only mat-and-thatch quarters. One cyclone coming from the south-east swept up the 50-mile reach of river five miles wide, wrecked no fewer than 22 vessels—steamers, launches, flats and residential flats—and damaged or destroyed 1,200 railway quarters in the Goalundo area. In one place five vessels lay thrown one on another in a heap against the bank. Stern-wheeler steamers, with the boilers forward and engines aft, were picked up and thrown on to the foreshore, breaking their backs, as all the unladen weight was at the two ends. The havoc would have been worse had not most of the vessels with steam up stood out from the shore. The office flat of one of the steamer companies had the week's wages of all the staff on board, and many thousands of rupees went to the bottom with it.

Locomotive Costs in New Zealand

THE statement issued by the Minister of Railways and which includes the annual report of the general manager of the New Zealand Government Railways, a brief summary of which appeared in the February 6 issue of THE RAILWAY GAZETTE, contains some interesting statistics relative to the costs involved in operating the locomotive stock during the years 1940 and 1941. The items of expenditure appearing under the heading locomotive transportation show an increase of £150,923 (8·37 per cent.); the total amount expended was £1,953,913, as against £1,802,990 last year. The increased cost and consumption of coal alone accounted for £103,539 of the increase, and heavier expenditure was also incurred in respect of wages-costs and charges for stores and water. The consumption and cost of coal during the last three years was:—

	1939	1940	1941
	Tons	Tons	Tons
Consumption	484,423	492,456	528,552
	£	£	£
Cost	738,991	780,686	851,771

During the year engine-miles increased by 425,493, or 2·34 per cent., and engine-hours by 76,361, or 4·33 per cent., compared with 1939-40. The average consumption of coal and its cost for each engine-mile, per engine-hour, and for each 1,000 gross ton-miles for 1941 compared with 1940 were as follow:—

	Consumption		Cost	
	1941	1940	1941	1940
	lb.	lb.	d.	d.
Per engine-mile	69·53	64·63	11·97	10·98
Per engine-hour	678·35	650·55	117·13	110·50
Per thousand gross ton-miles	395·74	390·02	68·33	66·25

The following table furnishes statistics of locomotive operation for the last five years:—

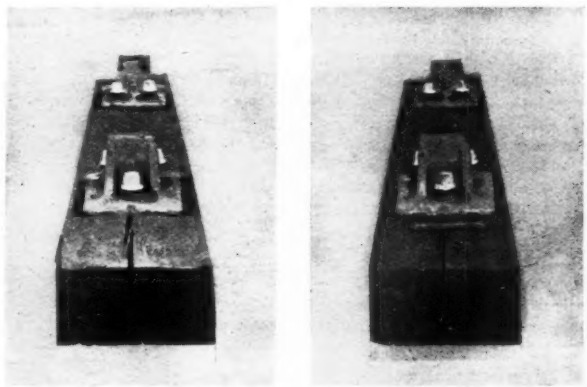
	1937	1938	1939	1940	1941
	d.	d.	d.	d.	d.
Cost per engine-mile	20·23	22·52	23·27	23·78	25·18
Cost per train-mile	26·84	30·04	31·00	31·58	33·91
Cost per engine-hour ...	212·03	233·26	239·93	245·28	254·78
Cost per 1,000 gross ton-miles	128·24	141·43	147·25	149·87	151·42
	No.	No.	No.	No.	No.
Engine-miles per engine-hour	10·48	10·36	10·31	10·32	10·12
Gross ton-miles per engine-hr.	1,653	1,649	1,629	1,637	1,683

Under the heading of maintenance of rolling stock, the sum of £2,043,976 was expended during the year, an increase over the expenditure for the previous year of £147,610 (7·78 per cent.). This is due, very largely, to increased depreciation charges consequent upon the purchase and construction of additional rolling stock, plus the cost involved in the payment of the cost-of-living allowance to the staff.

The net increase in expenditure on locomotive repairs was £28,046 (3·41 per cent.). Depot repairs accounted for £17,706 and depreciation charges for £40,983. The cost of workshop repairs decreased by £26,158, and the item "conversions and alterations" also showed a decrease amounting to £6,420. The following table shows the cost of maintenance for each locomotive and each locomotive-mile over five years:—

Cost per locomotive					Cost per locomotive-mile				
1937	1938	1939	1940	1941	1937	1938	1939	1940	1941
£	£	£	£	£	d.	d.	d.	d.	d.
1,117	1,228	1,350	1,312	1,333	9·61	9·82	10·31	10·85	10·93

The maintenance of carriages and vans entailed an expenditure of £426,320, an increase of £62,868 (17·30 per cent.) compared with the preceding year. The main items of increased expenditure were—carriage repairs, £35,011; conversions and alterations, £8,665; and higher depreciation.



Baltic redwood sleeper which had split under the screwing machine when the chairs were being fixed, renovated (right) with a Chamberlain patent "dog"

The Development of Diesel Passenger Transport on the G.W.R.

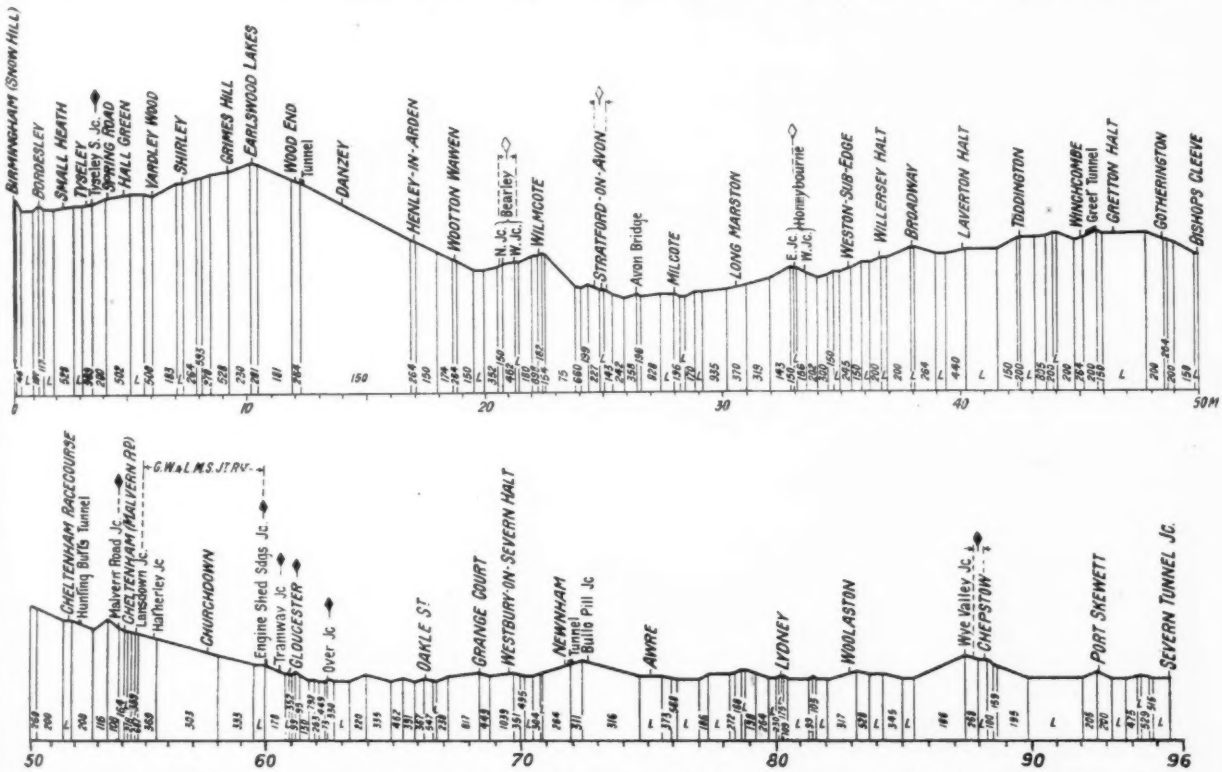
II.—The Birmingham-Cardiff Express Service

The express railcars running over the 117-mile route between Birmingham, Cheltenham, Gloucester, Newport, and Cardiff have proved so popular that two twin diesel railcar units with intermediate 70ft. trailer coach have recently been completed to take over the working, with 184 seats, and lavatory accommodation

AS has been previously mentioned, the first express passenger service was established between Birmingham, Cheltenham, Gloucester, Newport, and Cardiff in July, 1934, with two A.E.C. twin-engine buffet railcars, each with 44 seats. The journey time over the 117·1 miles between Birmingham and Cardiff, stops included, was from 2 hr. 19 min. (50·7 m.p.h.) to 2 hr. 30 min. (46·8 m.p.h.), according to the path available. The fastest start-to-stop timing was from Cheltenham to Birmingham (Snow Hill), 54·1 miles in 59 min., at 55 m.p.h., and on this section occurred the worst banks on the route—5 miles out of Cheltenham mainly rising at 1 in accommodation and seating for 104 passengers, intended expressly for this service. The cars were to be geared for a top speed of 75 m.p.h.

War-time Service Requirements

Meantime the war began, and as a result delivery has been delayed. At first, also, the Birmingham—Cardiff railcar service was taken off, but there was later a restoration of the morning train from Birmingham to Cardiff, and the early evening train from Cardiff to Birmingham, by the Cheltenham route. As in effect these replaced both a railcar and a



Gradient profile of G.W.R. main line between Birmingham and Cardiff, via Gloucester, on which the diesel express service operates. The 20-mile section on from Severn Tunnel Junction to Cardiff (not shown) is practically level throughout

150-200, 1¼ miles up at 1 in 75 between Stratford-on-Avon and Wilmcote, and 9½ miles continuously up past Henley-in-Arden to Earlswood Lakes, including 6¼ miles at 1 in 150 and 2¼ miles at 1 in 180, also severe service slacks through Stratford-on-Avon and Tyseley. Running speeds where practicable were therefore of the mile-a-minute order, and the rated maximum was 70 m.p.h. Each car made the return journey of 234·2 miles daily. As the railcar timings compared with steam timings of 3 to 3½ hr., whether *via* Cheltenham or *via* Hereford, the railcar service became deservedly popular, and additional accommodation became essential. This explains why, of the 20 new diesel railcars ordered by the G.W.R. from A.E.C. in 1938, it was specified that four should be supplied in two-car units, with buffet and lavatory steam train in each direction, the 44-seater railcars were completely inadequate, and a steam train was therefore substituted, making additional stops at Stratford-on-Avon in both directions, and also, conditionally, at Chepstow and Hall Green (a Birmingham outer suburban station) on the eastbound journey. The eastbound train, with the same number of stops as the pre-war steam train, was allowed 2 hr. 51 min., as compared with 2 hr. 25 min. by railcar and 2 hr. 55 min. with steam up to the onset of war; and the westbound time of 2 hr. 42 min., with one stop more than the railcar and several less than the steam train, compares with the pre-war 2 hr. 22 min. and 3 hr., respectively. The pre-war diesel railcar and steam schedules, and the present schedule, are compared in Table 3.

TABLE 3—G.W.R. DIESEL RAILCAR AND STEAM TRAIN SCHEDULES: 1939, 1941 & 1942

Distance		Diesel Railcars 1939		Steam Service 1939	Steam Service 1941	Present Diesel Services
Miles		a.m.	p.m.	a.m.	a.m.	a.m.
0·0	BIRMINGHAM ... dep.	9.05	3.40	9.20	9.10	9.10
4·8	Hall Green	—	—	9.29	—	—
17·0	Henley-in-Arden arr.	pass	pass	9.43	pass	pass
	dep.	9.24	3.59½	9.44	9.32	9.32
25·0	Stratford-on-Avon arr.	pass	pass	9.55	9.43	9.43
	dep.	9.34½	4.09½	10.00	9.45	9.45
54·1	CHELTENHAM SPA arr.	10.05	4.40	10.33	10.21	10.20
	dep.	10.06	4.41	10.36	10.22	10.22
60·9	GLOUCESTER arr.	10.18	4.55	10.47	10.33	10.33
	dep.	10.20	4.57	10.53	10.38	10.38
80·3	Lydney ... arr.	—	—	11.17	—	—
	dep.	—	—	11.18	—	—
88·2	Chepstow arr.	—	—	11.29	—	—
	dep.	—	—	11.30	—	—
95·6	Severn Tunnel Junction arr.	pass	pass	11.41	pass	pass
	dep.	11.00½	5.40	11.42	11.22	11.22
105·4	NEWPORT arr.	11.11	5.52	11.56	11.34	11.34
	dep.	11.12	5.54	11.59	11.36	11.38
117·1	CARDIFF ... ... arr.	11.27	6.10	12.15	11.52	11.54
		a.m.	p.m.	p.m.	p.m.	p.m.
0·0	CARDIFF ... ... dep.	9.10	4.50	3.30	4.45	5.05
11·7	NEWPORT arr.	9.24½	5.04½	3.46	5.01	5.22
	dep.	9.26½	5.05½	3.50	5.04	5.25
28·9	Chepstow arr.	—	—	4.13	5.27	5.49
	dep.	—	—	4.15	5.28	5.51
56·2	GLOUCESTER arr.	10.16	5.55	4.48	6.02	6.30
	dep.	10.17½	5.56	4.54	6.06	6.34
63·0	CHELTENHAM SPA arr.	10.29	6.09	5.05	6.17	6.46
	dep.	10.30	6.10	5.07	6.19	6.48
92·1	Stratford-on-Avon arr.	pass	pass	5.40	6.55	7.26
	dep.	11.00½	6.43	5.42	6.59	7.30
100·1	Henley-in-Arden arr.	pass	pass	5.55	pass	pass
	dep.	11.10	6.52½	5.57	7.10	7.41
112·3	Hall Green ... arr.				7.26	8.00
117·1	BIRMINGHAM ... arr.	11.29	7.14	6.20	7.36	8.10

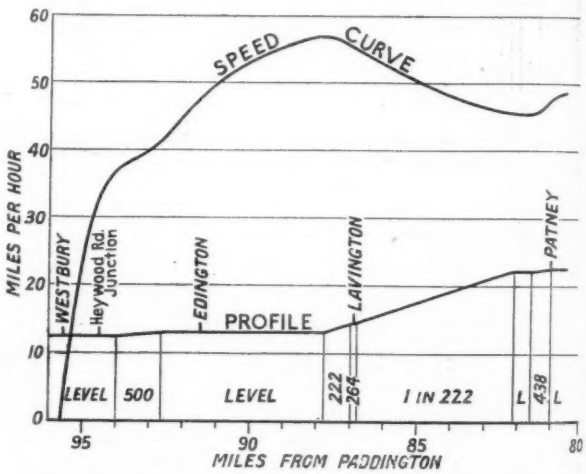
The fastest present schedule on the service is from Stratford-on-Avon to Cheltenham, 29·1 miles in 35 min. at 49·4 m.p.h.; the hardest is from Stratford-on-Avon to Hall Green, 20·2 miles in 30 min., including all the long and steep climb to Earlswood Lakes. Patronage is now so heavy that even the 104 seats of the proposed two-car units would have been inadequate. Opportunity has, therefore, been taken of the eased-out schedule to experiment with the addition of a trailer coach to the twin railcar unit, and the new three-car sets recently made their appearance from the A.E.C. works at Southall. The trailer is a standard G.W.R. 70 ft. 10-compartment corridor lavatory coach, seating 80 passengers, and bringing up the seating capacity of the unit to 184, while at the same time it increases the weight of the unit from 72 to 108 tons. With a complement of passengers and luggage, the gross weight to be moved is approximately 120 tons or slightly over. The trailer coach, marshalled between the railcars, has side doors throughout and two lavatories; it is connected by gangway to the railcars on both sides, and thus provides communciation between the buffet and all parts of the train.

Engine and Car Design

The engines of each railcar are of the A.E.C. direct-injection type, with six cylinders 120 mm. by 142 mm., giving 105 b.h.p. at 1,650 r.p.m., so that the aggregate output of the four engines of the unit is 420 b.h.p. The bogies have 3 ft. 2 in. dia. wheels at 8 ft. 6 in. centres, and the bogie pivots are 43 ft. 6 in. apart. The use of Luvax hydraulic shock absorbers, two of which are bolted to a bracket on each solebar of the bogies, has succeeded in damping the side sway which gave some trouble at first in the earliest cars. On a recent trial run of the first three-car unit from Southall to Westbury and back the riding of the railcars was admirably smooth at all speeds up to 70 m.p.h., whether in the leading or in the trailing car. The railcar bodies were built and finished at the Swindon works of the G.W.R., and the chassis at the A.E.C. Southall works. As with all 20 cars of the 1938 order, the design includes certain important modifications, compared with the cars delivered between 1934 and 1936; in particular, an altered exterior shape; different engines, located in staggered positions, and nearer the bogies, on each side of the underframe instead of opposite; tread brakes in place of drum brakes; and the provision of the hydraulic shock-absorbers just mentioned. Each car is 62 ft. long over headstocks, and has centre doors for passengers opening into a small lobby 3 ft. wide, from which the passenger saloons on each side are entered. The layout of the two railcars is shown in the accompanying plan, from which it will be noticed that the buffet counter has the usual longitudinal arrangement, with ample circulating space alongside. The cooking equipment includes a small gas grill, so that cooked meals can be served and all the seats in both railcars are provided with tables for refreshment purposes. The remainder of the kitchen equipment is of the usual G.W.R. buffet car type, with very attractive finish; on the serving side of the counter there are some ingenious cupboard arrangements for providing maximum storage in minimum space; in the corner adjacent to the gangway a refrigerator cupboard is provided. An oil-fired boiler for supplying steam heat to the trailer coach is housed in a small compartment opposite the lavatory in one of the two cars. The railcars themselves are heated by the engine cooling water. Light luggage is accommodated in the compartments between the driver's cabs and the passenger saloons.

Trial Run of New Unit

On October 15, 1941, a trial trip was made with the first of the two new three-car units from Southall to Westbury and back. On the down journey intermediate stops had been arranged at Slough, Reading, Newbury, Bedwyn, and Patney to test the acceleration from rest on the level and on rising and falling gradients, while the return journey was scheduled non-stop, in order to record the behaviour of the unit in continuous running at speed. The schedule was based on previous trials of the single cars, with



Acceleration curve of three-car diesel set out of Westbury on trial trip

allowance for the addition of the 36-ton trailer, and on the demands of the present schedule of the Birmingham—South Wales railcar service. The level starts from Southall and Reading produced a speed of 38½ to 40 m.p.h. in 2 miles, 48½ m.p.h. in 3 miles, and up to 51 m.p.h. in 4 miles; the lowest running speed was 30½ m.p.h. up the final 1 in 106 to Savernake, and the highest was 68 m.p.h., near Lavington.

The up journey gave the best demonstration of the speed capacity of the new unit. Out of Westbury the 7¾ miles to milepost 87¾ are level, and on this stretch speed rose to 57 m.p.h.; the next 6 miles, entirely up at 1 in 222, were covered at an average of 50·3 m.p.h., with a minimum of 45½ m.p.h. Table 4 gives details of the times and speeds on this run. From Patney speed fluctuated between 61 and 52 m.p.h. on the ensuing stretch to Savernake, which, though undulating, is mainly on adverse grades, speed on the final 3-mile bank to the summit falling to 52 m.p.h.

Elevation and plan showing the ordinary 70-ft. third class coach coupled between the two motor coaches; the buffet counter is at the right-hand end of the left-hand motor-coach

Interior views (left) looking towards the buffet and (right) the buffet compartment

NEW THREE-CAR DIESEL EXPRESS UNITS, G.W.R.

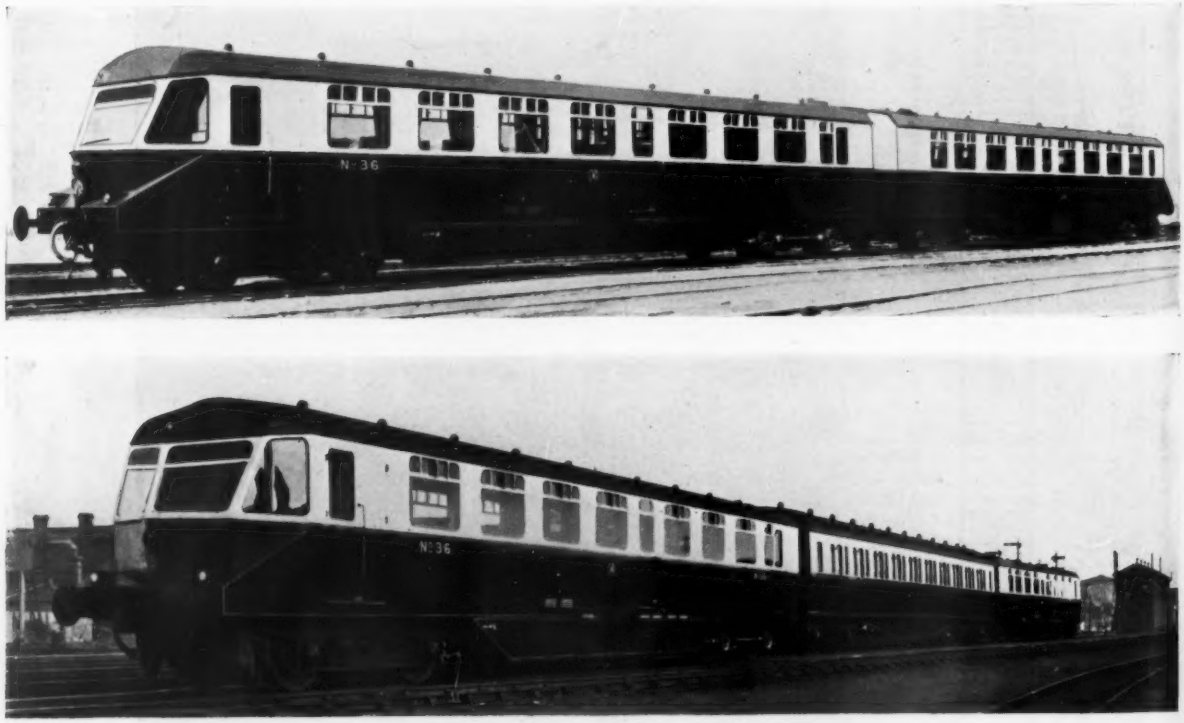
For 31 miles from Savernake the gradients are unbrokenly favourable, and after a slack through Grafton Curve junction, the next 30·1 miles to milepost 38½ were covered in 27 min. 38 sec., at an average of 65·4 m.p.h., with a maximum of 70½ m.p.h. beyond Bedwyn and again at Newbury. Speeds of 65 and 66 m.p.h. were maintained on practically level track, and the average just mentioned included slight slacks through Hungerford and Midgham. A distance of 50 miles between mileposts 88½ and 38½ was covered in 50 min. 5 sec., at an average of almost precisely 60 m.p.h., and it is noteworthy that this included the entire 18-mile climb to Savernake summit. In the first hour from Westbury start the train ran a distance of 56¼ miles. Adverse signals compelled a stop outside as well as in Reading station; the 59·6 miles from Westbury to Reading occupied 66 min. 6 sec., or 64½ min. net, a gain of 6½ min. on the time that had been scheduled to passing Reading. The stop at Reading was made just as the up Torbay Express was leaving, and the railcar unit, which followed on the up fast line, was in sight of adverse distant signals for most of the way from there to Southall from the express ahead. Notwithstanding this, the actual time from Westbury to Southall was about a minute less, inclusive of the two stops and all signal checks, than the 104 min. which had been allowed for the 86·5 miles, and with a clear road throughout there would have been little difficulty in cutting this schedule to 92 min. The fuel consumption on the return journey worked out at 3·6 miles per gal.; or 396 ton-miles per gal. It may be added that the oil-fuel capacity of the twin unit is 200 gal.

TABLE 4—G.W.R. WESTBURY—READING
EXPERIMENTAL RUN WITH 3-COACH DIESEL RAILCAR UNIT
Weight: 108 tons tare, 110 tons gross

Distance	——	Times	Speeds†
miles		min. sec.	m.p.h.
0·0	WESTBURY	0 00	—
0·6	*Milepost* 95	1 54	27
1·6	,, 94	3 40	38
2·6	,, 93	5 13	40½
3·6	,, 92	6 37	45
4·2	Edington	7 24	—
4·6	*Milepost* 91	7 52	50
5·6	,, 90	9 03	52½
6·6	,, 89	10 09	56
7·6	,, 88	11 12	57
8·6	,, 87	12 17	55½
8·7	Lavington	12 23	—
9·6	*Milepost* 86	13 23	52½
10·6	,, 85	14 33	50
11·6	,, 84	15 47	48½
12·6	,, 83	17 03	46½
13·6	,, 82	18 21	45½
14·5	Patney	19 28	53½
16·7	Woodborough	22 03	52½/61
20·3	Pewsey	25 47	57
23·1	Wootton Rivers	28 43	53½/54
25·5	SAVERNAKE	31 23	52
27·0	*Grafton Curve junc.*	33 08	45*
29·2	Bedwyn	35 13	70½
34·1	Hungerford	39 43	58*
37·1	Kintbury	42 40	66
41·4	*Enborne junc.*	46 26	65
42·5	NEWBURY	47 28	70½
46·0	Thatcham	50 38	67
48·8	Midgham	53 17	60*
50·8	Aldermaston	55 03	68
54·3	Theale	58 13	66
57·1	*Milepost* 38½	60 46	—
57·7	*Southcote junc.*	61 30	45*
58·7	Reading West	62 54	—
		sigs.	
59·6	READING	66 06	3

Net time, 64½ min. Schedule, 71 min.
* Service slacks. † Two speeds on the same line in this column indicate fluctuations in speed between this and the next timing point.

Full details, descriptions, and illustrations of the various G.W.R. diesel-railcar developments have from time to time been given in the *Diesel Railway Traction Supplement* of THE RAILWAY GAZETTE, as follow:—July 14, 1933 (page 78) and November 3, 1933 (page 672), the first 70-seat railcar; June 15, 1934 (page 1080) and July 13, 1934 (page 86), the first 44-seat buffet railcars; May 12, 1939 (page 70), "The Development of the A.E.C. Railcar," by Mr. C. F. Cleaver, of that company, with a supplementary description in December 22, 1939 (page 188), of the engines and transmission; June 7, 1940 (page 68), a detailed survey by the same author of the maintenance of the A.E.C. cars and their service records; and, lastly, a complete illustrated description of the new 3-car units in the *Diesel Traction Supplement* for November, 1941.



Two views showing (above) the twin-unit buffet railcar set with 104 seats as originally planned for the Birmingham—Cardiff Express Service, and (below) the same with interposed corridor trailer-coach increasing the accommodation to 184 seats

RAILWAY NEWS SECTION

PERSONAL

Lt.-Commander Wilfrid Green, R.N. (retired), has been appointed Deputy Regional Commissioner for Civil Defence, South Eastern Region, in succession to Mr. Hartley Shawcross, K.C., who has been appointed Regional Commissioner for Civil Defence, North Western Region.

We regret to record the death on July 20, at the age of 71, of Sir Henry Edward Barker, lately Ministry of War Transport Representative for the Middle East. He was a former President of the British Chamber of Commerce in Egypt.

Mr. M. A. Crane, A.M.I.Mech.E., A.M.I.Loco.E., who retired recently from the post of Senior Locomotive Superintendent, Gold Coast Government Railway, has joined the staff of Beyer, Peacock & Co. Ltd., in London, as from July 1. Mr. Crane received his training at Swindon with the Great Western Railway. He had held the successive appointments of Chief Draughtsman and Research Officer with the Nigerian Railway before serving with the Gold Coast Government Railway.

Mr. Cecil Bentham, M.Inst.C.E., M.I.Mech.E., is relinquishing the post of Managing Director of Henry Simon Limited at the end of the year. He will continue as Chairman of the company.

Lord Brabazon and Mr. W. Lionel Fraser have been appointed Directors of Thomas Tilling Limited. Lord Brabazon was the last Minister of Transport (from October, 1940, to May, 1941); he is a Director of the Associated Equipment Co. Ltd.

The Earl of Radnor, of Longford Castle, Salisbury, a Director of the Southern Railway Company, has been made a Deputy Lieutenant for the County of Wilts.

Sir Francis Joseph has been appointed a Director of the United Kingdom Commercial Corporation Limited; he will be also Acting Chairman during the absence in West Africa of Lord Swinton. Sir Francis Joseph is a Director of the London Midland & Scottish Railway Company.

We regret to record the death on July 20 of Mr. Vincent L. Dean, V.D., General Secretary, Indian Railway Conference Association, and formerly Divisional Superintendent, Ferozepur, North Western Railway, India. He was Resident Manager, Indian Railways Publicity Bureau, New York, from February, 1937, until that office was closed in June, 1938. Some details of Mr. Dean's career, and a portrait, will appear in our next issue.

Mr. E. C. Bredin, Chief Mechanical Engineer, Great Southern Railways, Eire, who, as recorded in our October 24, 1941, issue, was appointed Acting General Manager in succession to Mr. Morton, has been appointed General Manager. Mr. Bredin was educated at Mountjoy School, Dublin. He obtained his engineering training as an apprentice in the works of Fielding & Platt Limited, Gloucester, from November, 1905, to November, 1907, and was later a pupil in the locomotive, carriage, and wagon works of the Great Southern & Western Railway, Inchicore, from November, 1907, to November, 1909, when he was attached to the Locomotive Engineer's Office, Inchicore, in connection with locomotive coal consumption; subsequently he was appointed Junior Assistant to the Running Superintendent. In 1911 Mr. Bredin was appointed Shed Foreman at Rosslare (G.S. & W.R.), and his duties included the operation and maintenance of the electric generating station, gas works, and electric cranes. Three years later he became Assistant to the Running Superintendent, and later District Locomotive Superintendent, Northern District, Inchicore. In 1916 Mr. Bredin was promoted to be Assistant Works Manager, Inchicore, and in 1921 became Works Manager there. In 1925, on the amalgamation of the railways in Eire, he carried out the reorganisation of the various locomotive workshops on the system, and thereafter generally supervised their co-ordinated working. He was appointed Chief Mechanical Engineer in April, 1937. Mr. Bredin is a member of the Institution of Mechanical Engineers, and of the Institution of Civil Engineers, Eire.

Lafayett'e [*Dublin*

Mr. E. C. Bredin

Appointed General Manager,
Great Southern Railways, Eire

Mr. William Leon, Vice-Chairman of Mountstuart Dry Docks Limited, has been elected Chairman of the company in succession to the late Lord Glanely. Mr. Leon is Chairman also of the Dry Dock Owners' Federation. Sir W. Reardon Smith succeeds him as Vice-Chairman of Mountstuart Dry Docks Limited.

Mr. Henry Lowry Spratt, Commercial Advertising Officer (Road Transport), London Passenger Transport Board, is retiring today (July 31). He has been responsible for 33 years for commercial advertising on road-transport vehicles in London, and prepared for publication the first official list of bus routes and the first bus-route map. Mr. Spratt was born in Belfast in 1877, but was educated in London, and apprenticed to the drapery trade when he was 14½ years old. Disliking this, he went to Australia and after two years proceeded to New Zealand and then to California. After a varied and at times exciting career in various parts of the United States, he returned to England in 1906 and joined the staff of the London Motor Omnibus Co. Ltd., which ran the once-famous fleet of Vanguard buses. The Vanguard undertaking was amalgamated with the London General Omnibus Co. Ltd. in 1908, and Mr. Spratt became engaged on publicity for the combined undertaking. An official list of bus routes was prepared by him and first published in June, 1910, and soon afterwards he proceeded to design the well-known London bus map with particulars of routes on the back, the first issue of which appeared in March, 1911. Mr. Spratt then became interested in commercial advertising under the late Mr. R. T. Kingham, a former Secretary of the London General Omnibus Company, and, for upwards of 30 years, has handled almost every type of advertising. Mr. Spratt is a member of the Aldwych and Constitutional Clubs, and has been a Freemason for more than 25 years.

Mr. E. P. Flintoft, K.C., General Counsel, Canadian Pacific Railway, has been appointed Vice-President & General Counsel. He fills the vacancy on the Executive Committee caused by the death of Mr. W. N. Tilley, K.C.

Mr. E. B. Vignoles and Lt.-Colonel W. A. Vignoles, D.S.O., recently presented to the Royal Society a gold snuff-box, once the property of their grandfather, the late Charles Blacker Vignoles, F.R.S., who designed the flat-bottom rail which bears his name. He had a long career in railway

and civil engineering, and was elected a member of the Royal Society in 1855; he was President of the Institution of Civil Engineers in 1870-71. The snuff-box was given to him in 1844 by the King of Württemberg, after he had advised on railway plans for that state. Sir Henry Dale, President of the Royal Society, accepted the gift and said that it would be treasured as a reminder of a distinguished past member.

Amongst awards for gallantry displayed after the Burma Railways had been taken over by the Army in Lower Burma, and before Rangoon was evacuated, the Distinguished Service Order was presented to Lt.-Colonel W. H. Prendergast; Major J. D. Lewis was decorated with the Military Cross; and Corporal Hector Soord received the Military Medal. Lt.-Colonel Prendergast displayed conspicuous gallantry at Wanetchaung, where the enemy derailed the last train from Rangoon, on the footplate of which he was riding; he organised the defence of the train, and the withdrawal of the passengers. Major Lewis continued, with the aid of a skeleton staff, to keep the railway in operation around Toungoo, in spite of frequent air raids, and it was due to his leadership that a whole division was maintained, and later withdrawn by rail. Corporal Soord was entrusted with the removal of locomotive-workshop equipment from Insein, and it was due largely to his efforts that a great deal of valuable machinery was saved. He volunteered also to act as armed escort on the footplate of one of the last trains from Rangoon. The locomotive was derailed, but he kept the enemy at bay for two hours, until relieved, and saved the lives of the engine crew.

South African Staff Changes

Mr. E. H. Wilson, Assistant Chief Civil Engineer, South African Railways & Harbours, has been appointed Chairman of the newly-constituted Economic Bureau.

Mr. E. X. Brain, System Manager, Durban, has been appointed Assistant Chief Civil Engineer, in succession to Mr. Wilson.

Mr. W. B. A. Ritchie, Inspecting Engineer, Johannesburg, has been appointed to act as System Manager, Durban, in place of Mr. Brain.

Standard Station Signs

(*See letter to Editor on page* 101)

Right: Surbiton Station, which is typical of modernised stations. The supports of the station buildings between the windows were specially designed to take double-royal posters and all the name-signs are standardised. The station name-signs are placed so as to catch the lights, and the words "Ladies Room," "Waiting Room," and the figure 3 are all standard signs used extensively on the Southern Railway

Above: Southampton Central Station, which provides a good example of clarity in signs. Right: A standard lamp and standard station name-sign on the Southern Railway

TRANSPORT SERVICES AND THE WAR—150

Broomielaw Station, L.N.E.R.

All passenger trains on the Darlington-Barnard Castle—Kirkby Stephen—Penrith branch of the L.N.E.R. now call at Broomielaw, between Winston and Barnard Castle. A private station has been in use here for many years past, and it is thus now made available to the general public.

Bank Holiday Travel Arrangements

Facilities for travel over the August Bank Holiday period, July 31 to August 4 inclusive, will be severely restricted. The total number of passenger trains which may be run is laid down in a direction issued by the Minister of War Transport to the railway companies. This direction limits the number of trains on the Friday, Saturday, Monday, or Tuesday, to the number run on any ordinary week day in July. Similarly, the number of trains on Sunday, August 2, is not to exceed the number run on an ordinary Sunday in July. Where trains are run in parts, each part will count as a separate train. In effect, the Minister's direction means that the total number of trains available during the August Bank Holiday period will be substantially less than in the corresponding period last year, and, although many factories will be closing for overhaul, this number of trains cannot be increased. Similar restrictions are necessary on road services to save tyres, fuel, and manpower, and operators of buses and coaches have been notified that no fuel can be issued for special holiday services.

Service Travel.—During the closed period, July 31 to August 4 inclusive, leave travel will be reduced to the minimum by adjusting the dates on which members of the Forces would normally travel. Leave to and from Northern Ireland and the islands around Great Britain will be allowed, as will also embarkation and compassionate leave.

Public Services.—In general the same restrictions will be observed by the Public Services. No free travel will be allowed except in compassionate cases, or where an officer has been scheduled in advance for a week's leave which cannot be taken at any other time.

Trips to Evacuees.—Vouchers for one or three-day trips to visit evacuees will not be issued on any day during the closed period. If any have been issued by the voucher-issuing authorities in advance of the present arrangements, they will not be valid, and the companies will be unable to issue tickets in exchange for them. Eight-day vouchers will be issued only in cases where the applicant produces to the voucher-issuing authority a written statement from the employer that a week's holiday has been given which cannot be taken at any other time.

Travel to and from Ireland

The London Midland & Scottish Railway Company, the Belfast Steamship Company, and the Burns & Laird Lines Limited have given notice that they will not issue rail and steamer tickets for travel to Ireland between July 23 and August 1, both dates inclusive, unless the passenger is in possession of a "sailing" ticket, which must be obtained in advance. Application for "sailing" tickets (issued free of charge) should be made at least 10 days before the date of the proposed journey, and must state clearly the proposed date of travel, together with an alternative date. The application must be accompanied by a stamped addressed envelope. Similar "sailing" tickets will be required for journeys from Ireland from August 3 to 15 inclusive. Passengers to Ireland must also be in possession of the necessary "exit permit."

Closing London Tube Shelters

The use of six West End tube stations as dormitory air raid shelters is to be suspended from August 3 in the interests of economy and during the continuance of the present freedom from air raids in the London area. They are Oxford Circus, Tottenham Court Road, Hyde Park Corner, Piccadilly Circus, Leicester Square, and Strand. The bunks and equipment are being left in position and these stations will be available again for use as dormitory shelters immediately the need arises. London Transport staff will remain on duty all night to open the stations if necessary. Four tube station shelters in the West End, namely Bond Street, Green Park, Trafalgar Square, and Covent Garden, remain open. This is part of a policy whereby 43 out of the 78 tube station shelters will be closed temporarily, leaving 35 in regular use to serve the comparatively small number of persons who sleep nightly in them; a recent census showed that the figure had dwindled to 2,800.

London Bus Parking Scheme

The second stage in the scheme for parking buses in Central London to avoid non-essential journeys during the slack hours came into force on July 22. On that date slack hour journeys on 34 London Transport bus routes were eliminated, affecting about 250 vehicles. As we recorded in our July 24 issue (page 89), the buses are parked end to end in public streets, and are in charge of uniformed attendants.

Women have now taken over the stables of the Southern Railway, and are grooming horses as well as driving carts as shown in our picture

Tractor-Drawn Farm Trailers

In order to assist farmers, the regulations which require that a trailer may not be used behind an agricultural tractor, unless it is fitted with brakes complying with the Motor Vehicles (Construction & Use) Order, have been amended. Under a new regulation, made by the Minister of War Transport, an agricultural trailer drawn by a motor tractor need not be fitted with brakes if the laden weight of the trailer does not exceed 4 tons and the speed does not exceed 10 m.p.h. This exemption does not apply if more than one trailer is being drawn. The concession holds good for the duration of the war only. The concession enables a farmer to use his farm waggon for road haulage behind his tractor. Farmers are,

Left: One of the small units from the fleet of the Lincolnshire Road Car Co. Ltd. (an associate of the L.M.S.R. and L.N.E.R.), undergoing overhaul at the London Service Station of Karrier Motors Limited. It will be noticed that the vehicle bears the priority label of the Ministry of War Transport. A brief illustrated description of the repair of L.M.S.R. road vehicles at this service station was published at page 449 of our issue of October 31, 1941

however, once again warned that they may use for road haulage tractors licensed at the 5s. agricultural rate only between different parts of the farm and between the farm and a railway station. If they wish to use the tractor for road haulage without limitation of destination, they must take out the appropriate licence at a higher rate.

Railway Photography in Germany

A general police order was issued in March, forbidding the photographing of any railway, equipment, rolling stock and anything connected with a railway. It has been a general custom to take photographs of goods damaged in transit to facilitate the settling of claims, but this kind of photograph is now allowed only under special permit, which has to be obtained from the police in every separate case.

Restricting German Travel

Appeals to the German public to refrain from using the railways have recently been intensified. In some districts these appeals have been supplemented by the re-introduction of special travel permits. Such permits are required for train journeys from München-Gladbach to Leipzig (according to the *Westfälische Landeszeitung* of June 1); and from Berlin to Hamburg, Munich, Vienna, and Warsaw (stated the *Berliner Lokal-Anzeiger* of June 25). The permits are issued at the ticket office, not, it appears, for special reasons, but to those who apply first. Their issue ceases when sufficient have been secured to fill the available accommodation.

German Holiday Travel

In order to restrict passenger travel on the German railways during the summer months, the control over accommodation in health and holiday resorts has been tightened, according to the *Hamburger Framdenblatt* of June 24. A recent Executive Order under the Decree of April 20 specified priority claims to accommodation for different groups of persons. Soldiers on leave have a first claim and war workers a second. Until this Order was issued persons could reserve rooms on the showing of a doctor's certificate. Certificates no longer establish a right to accommodation in holiday centres, but only in health resorts. Even here, much greater details of need must now be given. In order to enforce these regulations, local control will be exercised and hotel proprietors who let rooms to persons without proper claims may be fined up to RM. 10,000. The rigorous enforcement of these measures is expected to discourage travel considerably. Details of the Decree of April 20 were given at page 706 of our June 26 issue.

Central Traffic Direction in Germany

Under an Order issued by the German Minister of Transport early in June, a Central Traffic Direction Office (Zentralverkehrsleitstelle) has been established at the headquarters of the Eastern General Operational Management (Generalbetriebsleitung Ost) in Berlin. The function of this new office is to regulate the transport of goods throughout Germany in accordance with war requirements. One main task is the allocation of wagons to trade and industry, while another prominent feature is the classification of requests for wagons according to the degree of priority in conformity with the rules laid down by the German Ministry of Transport. Provision is made for consultation with the Gebietsverkehrsleitungen Süd and West at Munich and Essen respectively. The President of the Central Traffic Direction Office is the President of the Eastern General Operational Management at Berlin. Members of the new office comprise representatives of the coal and timber trades, the armaments and munitions industry, the building industry' the iood industry, inland shipping, and of various general industries. The new organisation does not affect the Regional and District Traffic Managements (Gebietsverkehrsleitung and Bezirksverkehrsleitung) the functions of which were outlined at page 684 of our June 19 issue.

Denmark-Sweden Shipping Ban

The Danish Ministry of Justice recently issued an order prohibiting all shipping traffic from Denmark to Sweden except by the ferries and German ships. The order requires that no vessel of any kind may leave a Danish port for Sweden without a written permit from the police at the port of departure. This must be carried on the voyage and shown on demand. German vessels are exempted from the order. Breaches of the order are punishable by a fine or imprisonment up to two years. Special arrangements have been made for the exemption of the train ferries on the Copenhagen—Malmö and Elsinore—Helsingborg services. The new regulations, according to the *Svensa Sjöfartstidning*, presumably represent a tightening-up or extension of the previous pass procedure.

Curtailment of Danish Ferries

Ferry communication between Kalundborg (West coast of Zealand island on which Copenhagen is situated) and Aarhus (East coast of the Danish mainland), and the passenger boat services between Copenhagen and Jylland (Fredericia, Vejle, Horsens, Aalborg, etc.) have been discontinued from June 1. The official communique issued by the Danish State Railways states that in future passengers will cross the Great Belt at their own risk. The suspension of the Kalundborg-Aarhus ferry service has been ordered at the request of the Danish Ministry of the Navy, as a result of the dangers from mines and submarines with which the traffic is faced. Reference to the suspension from July 12 of the Copenhagen-Malmö ferry was made at page 42 of our July 10 issue.

Priority for Soldiers in South Africa

South African soldiers on duty or on leave may have first call on railway passenger accommodation on the South African railways; and then civilians on essential business will get their turn. This is part of a new priority railway travelling system being studied by the Union Railways & Harbours Administration. South Africans are being discouraged against needless travelling. Special trains are being cancelled, and all concessions, except to schoolchildren, are to disappear. The railways are at present operating under tremendous pressure, and most railwaymen are working sixty hours a week.

New Transatlantic Air Lines

A new air service between the U.S.A. and Great Britain was begun on June 21 by the American Export Air Lines, a company associated with shipping interests, and a competitor of Pan American Airways Inc.

The British Overseas Airways Corporation is maintaining a regular air line between Great Britain and the U.S.A. for Government officials and other priority passengers.

A new transatlantic air line of the Pan American Airways system has begun flights from Natal, in the Brazilian State of Rio Grande do Norte, to points on the African coast. Stops are made at Bathurst, in Gambia; Lagos, in Nigeria; and Leopoldville in the Belgian Congo.

It appears that German ingenuity has succeeded in using some of the Pan American transatlantic air lines for its own mails, a step made possible by the fact that Pan American Airways Inc. is a common carrier on the route from Portuguese Guinea to South America under its Portuguese licence. It is therefore compelled to accept Portuguese mail, regardless of the country of origin, and to carry it between Lisbon, Bolama (Portuguese Guinea), Natal (Brazil), Rio de Janeiro, and Buenos Aires. A report from Buenos Aires dated June 11 said that letters and newspapers were arriving in Argentina from Germany in less than a fortnight, and having passed through only German censors.

A view from the Peak over the city of Victoria (note the famous Peak tramway) and across the harbour to Kowloon, which forms part of the mainland territory of Hong Kong

Argentine Railwaymen Aid War Effort

One of the ten mobile canteens, which, as reported in our May 8 issue, are being presented to Great Britain by non-British employees of Argentine railways, was received recently in London by Miss Ellen Wilkinson, Parliamentary Secretary, Ministry of Home Security.

Mineral Railway Tunnel for Shelter

BEFORE the outbreak of war, Mr. Percy Parr, the City Engineer & Town Surveyor for Newcastle-upon-Tyne, found difficulty in reconciling bomb-proof shelters having a cover of 30 ft. (later increased to 50 ft. as a result of experience gained during the war) with peace-time uses for such shelters, as for instance as car parks or garages. He, therefore, turned his attention to the possibility of adapting the Victoria or Spital Tongues Colliery Wagonway Tunnel, running right under the city, as a deep air-raid shelter. The conversion of this tunnel has already been referred to briefly in our columns (at page 637, June 5 issue), and for the following details of the work we are indebted to a paper presented recently to the Institution of Municipal & County Engineers in Newcastle by Mr. Redvers W. Grant, A.M.Inst.C.E.

Dimensions of the Tunnel

The mineral railway, or wagonway, was begun on June 27, 1839, and took 2½ years to build. It was completed in January, 1842, and the tunnel was opened throughout its 2½-mile length from the colliery to the River Tyne near Glasshouse Bridge for the use of wagons working between the pit and the river. There was a fall of 222 ft. in this distance, and the dimensions of the tunnel are 7 ft. 5 in. high × 6 ft. 3 in. wide. The depth of the tunnel below ground level varies from 30 ft. to 85 ft., and over the greater part of its length the top cover exceeds 40 ft.; this length is mainly under the centre of the city. Though not concerned with the shelter, it is of some interest to note that the track through the tunnel was of 4 ft. 8 in. gauge, and that, though the loaded wagons ran down by gravity, a 40-h.p. stationary engine with a capacity of 32 wagons was used to haul up the empties.

The tunnel is arched in brickwork and has an inverted stone arch at the bottom. It was driven entirely through clay though stone appears to exist near the surface all round it, and the assumption is that it deliberately followed the course of an ancient valley, subsequently silted up with clay deposits; this is borne out by its winding alignment. As the brickwork of the tunnel was in reasonably good condition, only scraping and cleaning were necessary to convert it into a shelter. To remove the slime and mud, however, several entrances were needed to reduce haulage and cost. The only access to it before adaptation was a man-hole at Ouse Street near the river end.

Taking into account depth of cover and accessibility, it was decided to use the length of tunnel between Hunter's Road and Ouse Street, off City Road. An entrance was made in the first instance at Claremont Road, and a survey run through the tunnel to the Ouse Street man-hole. As a check, a surface traverse was run back again, providing a closed traverse survey. This showed that the tunnel was not always exactly where it was shown on the old maps, and enabled the new entrances to be fixed with accuracy.

The Design of the New Entrances

After careful consideration, it was decided to construct the new entrances at a slope of 1 in 4, a gradient that at once reduced the length of the new entrance excavation and provided a slope easily negotiated by the public. Stepped 1 in 2 entrances as a standard type were ruled out by the difficulty of driving the headings at that slope, a difficulty confirmed where short lengths of 1 in 2 had to be introduced in the 1 in 4 slopes for special reasons. Actually, two of the entrances were eventually sloped at 1 in 7. To guard against H.E. bombs dropped on the surface near the entrance or on the entrance where the top cover was insufficient to prevent penetration, one or more angle bends were introduced into the alignment of each entrance.

Brick Arching Considered but Discarded

Brick arching was first considered for the entrances but was discarded owing to the constriction of the small cross sectional area (6 ft. 6 in. high × 5 ft. 6 in. wide) by the required centring and to the limiting of the headroom by an arched section reducing the effective width of the entrance. Lack of space for shuttering and the difficulty of placing reinforcement also mitigated against the use of a reinforced concrete box section. Eventually, therefore, a 4½-in. side wall was used with 9 in. of concrete behind it—brought up to height in short lifts—and with pre-cast r.c. slabs as roof and a 4-in. concrete floor, to take side thrust at floor level and on the walls. As each slab weighed about 1 cwt., it was easily man-handled into place. Altogether seven entrances were constructed; two of these were double and five were single.

Various methods were employed for driving the entrances, manual, and with explosives and pneumatic cutters, according to the soil encountered. In almost all cases ordinary timbering methods were used, and headings were driven both from the surface and from the tunnel. Spoil was removed through the tunnel in tubs, and to the surface by winch, crane, or (in the 1 in 7 entrances) by barrowing. Working shafts were also used in some places. It was decided that no pilot heading should be driven, because of the small size of each entrance.

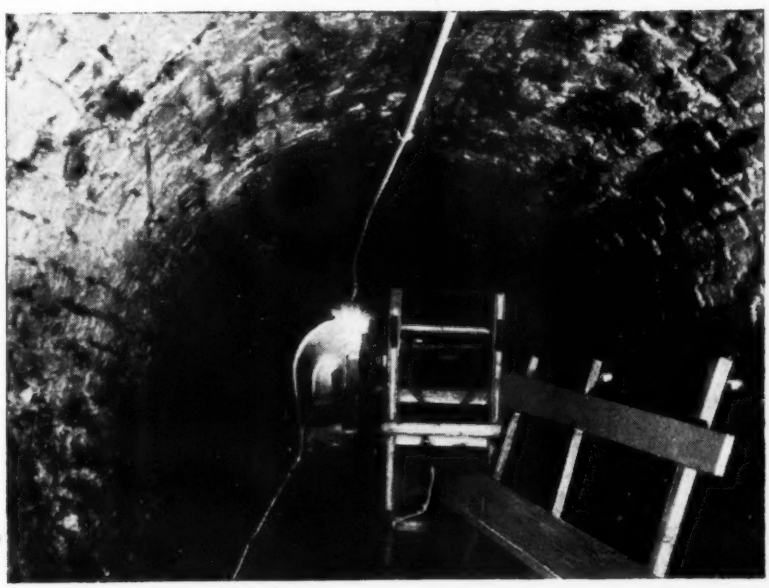
Some of the Difficulties Encountered

Considerable difficulties in the shape of water and running sand were encountered in driving some of the entrances. In one instance tunnelling had to be abandoned in the first 30 ft. (vertically) and replaced with an open cut and very heavy timbering. Below 30 ft., however, clay was entered and tunnelling was resumed with the aid of Larsen interlocking steel piling. In two instances the first 25 ft. or 30 ft. of each entrance had to be stepped at a slope of 1 in 2, either to avoid house foundations or because the entrance had to be driven under a road, and it was at these two places that vertical shafts were sunk at the feet of the 1 in 2 slopes; the remaining lengths of each were sloped at 1 in 7.

Water and Running Sand Problems

Trouble with water and with running sand in one or two cases caused subsidences, as a result of which sewers were broken. On one occasion a heavy rainstorm caused a conduit crossing over the entrance to burst and flood the entrance. The water was pumped out and additional timbering erected, as cavities had formed above the roof and behind the sides. The gas and water mains had, fortunately, been diverted, but two sewers had to be repaired. Meanwhile, the downstream heading from the shaft at this entrance had continued to progress, but later the saturation of the soil and running sand necessitated the heading being boxed up and the entrance being driven towards it from the other face. It will be seen, therefore, that many obstacles had to be overcome.

The tunnel was finally furnished with a tarmac floor, seats, and chemical closets, and drainage was provided by open side channels leading into two convenient sewers, one near the lower end and one about half way along the tunnel, under which both ran. Electric lighting was also provided throughout, and Medical Aid Posts and additional baffle walls are being added.



View inside the Victoria Tunnel

Questions in Parliament

Below are summarised Answers to Questions in Parliament affecting transport. The Minister concerned and the date of the Answer are given in parentheses

Railway Luggage

I am glad to say that arrangements have now been made to waive the charges for excess luggage on the railway journey from the port of arrival in this country to their homes of British refugees from Hong Kong and Rangoon who have reached this country from Australia. (Sir Arthur Salter, Joint Parliamentary Secretary to the Ministry of War Transport, July 15).

Uxbridge By-Pass Road

It is expected that the Uxbridge by-pass road will be opened before the end of the year. (Sir Arthur Salter, July 15).

Indian State Railways

The railway surplus for 1941-42 on the Indian State railways was expected to be Rs. 26·2 crores (£19,650,000). This figure was arrived at after charging a sum of nearly Rs. 1·5 crores (£1,100,000) for payment of cost-of-living bonuses to the lower paid staff, which was fixed after discussion, and in agreement, with the representatives of organised labour. The surplus earned by the railways, except so far as required to be placed to reserve, goes to the relief of the Indian taxpayer, who has previously had to bear the burden of the unprofitable years of depression. (Mr. L. M. S. Amery, Secretary of State for India, July 16).

Producer-Gas Vehicles Department

The Director of Producer Gas Vehicles is Sir Alfred Faulkner, who is 60 years of age and has special experience of fuel problems. The salary attaching to the post is £1,200 per annum. The senior staff at present proposed includes an administrative officer, and three technical men, a mechanical engineer, a chemist, and a production engineer, with the necessary technical and clerical assistance. (Sir Arthur Salter, July 16).

Sir Alfred Faulkner is not still employed in the Ministry of Fuel & Power. (Mr. T. Smith, Joint Parliamentary Secretary, Ministry of Fuel & Power, July 16).

Trolleybuses

Experience in the operation of trolleybuses has shown that their superior acceleration and braking have not, in practice, been detrimental to safety. Instructions have been given by operators to their staffs to ensure that trolleybuses shall be so driven as to minimise both risk to the public and wear and tear on tyres. (Mr. P. J. Noel-Baker, Joint Parlimentary Secretary, Ministry of War Transport, July 21).

The London Passenger Transport Board assures me that it has no outstanding complaint about the time allowances on trolleybus schedules; nor has it any evidence that the running times are insufficient. The arrangements in force provide that if any difference on this point arises between the board and the representatives of the men checks shall be taken. I may add that the reduced number of vehicles on the streets must clearly assist drivers to conform to schedule times. (Mr. P. J. Noel-Baker, July 21).

Refreshment Facilities at Stations

I have received very few complaints concerning the services at railway station refreshment rooms. Troops travelling on leave or on duty are given rations for their journeys and there are canteens for the Forces at about 120 of the busier stations and junctions. I suggest that civilian passengers who intend to make long distance journeys would do well to provide themselves with the food and drink which they may require. I am, however, inquiring whether improvements in the existing services can be made. (Mr. P. J. Noel-Baker, July 22).

Forth & Clyde Canal

The Forth & Clyde Canal belongs to the London Midland & Scottish Railway Company and is therefore already controlled under the Railway Control Order. The canal is used to a limited extent to relieve the railways and plans have been made for its further use. The limiting factor is that of the skilled and other labour which is available. (Mr. P. J. Noel-Baker, July 22).

Speed Limit

It would not be practicable to introduce a speed limit of 15 miles an hour in villages without also applying it to built-up areas. Such a measure, if it were observed, would seriously slow up the movement of road traffic, most of which is now essential to the war effort. The Ministry of War Transport is, however, carrying on sustained propaganda to impress upon drivers of motor vehicles the need to drive with care, and to have special regard for children. In this work they have acted in close collaboration with the Ministry of Information and have received the generous assistance of the British Broadcasting Corporation and the Press. Many local education authorities have helped by giving road safety instruction to children in schools. I hope that these measures may prove more efficacious than the introduction of restrictions which, at the present time, it would be difficult to enforce. (Mr. P. J. Noel-Baker, July 22).

Facilities between Barrow and Whitehaven

It is unfortunately not practicable to run any through trains from the South to Whitehaven or back, for the reason that main-line rolling stock will not pass through a small tunnel on the line outside that town. Extensive repairs and enlargement works on the tunnel make it necessary to close the Whitehaven line to all traffic between 10 p.m. and 5 a.m. The 6.15 p.m. train from Barrow to Whitehaven is an important workmen's train, the departure of which must not be delayed by waiting for the arrival of the train from the South. (Mr. P. J. Noel-Baker, July 22).

Road Services in Essex

The curtailment of long-distance road services in Essex, as in other parts of the country, was necessary in the national interest, to save imported fuel and tyres. I am asking the Regional Transport Commissioner to look into the facilities to Broomfield Sanatorium. I have looked into the cases of a number of sanatoria and have made improvements as to some of them. (Mr. P. J. Noel-Baker, July 22).

Travel Facilities for Old Age Pensioners

I am aware that limited facilities for free travel are provided for old age pensioners in Liverpool and in five other cities or towns in Great Britain. The carriage of workers to and from their places of work now creates heavy pressure on all means of transport. If I were to ask other authorities to provide free passes for old age pensioners, I should encourage demands for similar concessions from other classes of deserving people, and the effect would be to stimulate still more travel. For this reason, I am afraid I cannot adopt the suggestion. (Mr. P. J. Noel-Baker, July 22).

Road Accidents

Following are the figures of fatal and non-fatal accidents involving, respectively tramcars, trolleybuses and motorbuses run by the London Passenger Transport Board for the 12 months ended December 31, 1941, as circulated by Mr. P. J. Noel-Baker (Joint Parliamentary Secretary, Ministry of War Transport) in reply to a question on July 22 :—

FATAL ACCIDENTS

	Persons	Per 100,000 car miles	Per 1,000,000 passengers carried
Central buses ...	93	0·05	0·06
Country buses ...	22	0·07	0·11
Coaches	9	0·05	0·31
Trams	16	0·05	0·08
Trolleybuses	57	0·08	0·09
Total	197	0·06	0·08

NON-FATAL ACCIDENTS

Central buses ...	6,204	3·6	4·3
Country buses ...	1,118	3·6	5·6
Coaches	428	2·3	4·6
Trams	1,649	5·2	7·8
Trolleybuses	4,072	5·9	6·2
Total	13,471	4·2	5·3

Parliamentary Notes

Producer-Gas Vehicles

The Duke of Montrose, in the House of Lords, on July 22, asked the Government what number of vehicles had been sanctioned under the scheme for converting transport vehicles to producer-gas propulsion, what mileage they had run, and what fuel they had used. He also moved that the scheme for converting 50,000 transport vehicles to producer-gas propulsion, approved by the vote of the House on April 28, should be prepared and put into force as soon as possible.

He said that nearly twelve weeks had gone by and he had not seen any official statement as to what progress was being made towards the accomplishment of their desire that this scheme should be prepared and carried through as soon as possible. He understood that the scheme under review now had been considerably boiled down, and that instead of 50,000 plants under production or in view something like 10,000 was the figure now envisaged. If the Minister of War Transport envisaged only 10,000 plants, then the scheme was really too small to bother about. It would make no difference practically to the national position in the matter of oil, and it would be too small a scheme to justify the appointment of a special director and the creation of a special department. He was very sorry indeed to see that the appointment of Lord Ridley as special Director of this scheme had been terminated. He hoped that Lord Leathers would take an early opportunity of seeking the co-operation of Mr. Lawther, the new President of the Mineworkers' Federation, and of getting the miners to give him the necessary coal to produce the amount of suitable fuel required for the gas-producer scheme. He expected that the Minister of War Transport would also tell them that he had difficulty in persuading the Minister of Supply to give him the necessary steel. Let them take the figure of 25,000 tons of steel, which would go a long way towards giving them the producers necessary. With 25,000 tons of steel it would be possible to build only two small tankers and they would never carry all the oil which could be produced if that amount of steel were used to allow the producer plants to be manufactured. He would like to know how many producer-gas plants had actually been sanctioned by the Ministry of War Transport, and how many had been put on the road since April 28 last under this scheme. He understood that an order had

been placed for two or three thousand gas-producer plants to the design of Thomas Tilling Limited. If that first order had been placed for this design, it seemed to show that the Government design could not be very successful. If the Minister had gone to Tilling for his gas producers that was a step in the right direction. He had always advocated that the Minister of War Transport should place his confidence in the private manufacture of plants who knew by experience what they were doing.

The Minister of War Transport would be well advised to try to work hand in hand with the private manufacturers. In Sweden at the beginning of 1940 there were only 3,000 producer-gas vehicles. Sweden depended on imported oil in the same way that we did. By reason of developments in the war situation, Sweden lost the means of importing oil, and the Swedish Government accordingly appealed to the private engineering firms to help it out of their transport difficulties, with the result that now it had 73,000 producer-gas vehicles and 20,000 agricultural vehicles fitted for producer gas. All that had been done in little more than a year, simply by leaning on the experience of engineers and designers who knew what they were about. If Sweden could obtain that tremendous increase in the number of power plants by the help of private manufacturers, we could do the same. He understood that a scheme had been put before the Ministry of War Transport by a body called the Mobile Producer Gas Association. This was a body composed of experts and manufacturers of plants, and under this scheme they were ready to pool their experience and to standardise all parts which were common to all designs—piping, flanges, bolts, nuts, and so on. That should greatly simplify the whole matter. He appealed to Lord Leathers to give favourable consideration to co-operation with that association, and to take advantage of its knowledge and experience.

Lord Leathers' Reply

Lord Leathers (Minister of War Transport) said that on April 28 he informed the House of the Government's decision to equip some 10,000 vehicles with producer-gas plants. Those with practical experience of production would know that after a decision had been made a considerable time must elapse before anything like large scale production could be secured. Dealing with the progress that had been made since the Government's decision, Lord Leathers said that two types of improved Government apparatus had been developed. One of those types was the Tilling type. These two types constituted the wet- (or water-) filter system and the dry-filter system. The water-filter system was preferred for all those types of vehicles engaged on regular runs, going into garages at more or less stated intervals, so that in the process of things the garages could be so arranged as to have the necessary facilities for maintenance and therefore be able to work with considerable satisfaction. Of that particular type, some 2,500 had already been ordered. When the works were able to organise for this manufacture, and, in the language of the technicians, were "tooled up" for the big production, he could say they would have a production of about 400 per week. The other type of producer—the dry-filter—was better for that type of vehicle owned by people who ran relatively few. It would not be possible for them so to arrange in their garages for the necessary maintenance of these plants, because they would be only relatively few to be dealt with. After the most careful consideration, these two types had been decided upon in conjunction with the industry that would have to operate them. They would be able, by closer study that they were giving this matter, to order a further number of the water-filter type, so that that number was increased to about 5,000. So far as the dry-filter type was concerned, they had just completed designs in respect of them, and within a few days he hoped to be able to place an order for 5,000 of that kind. He was glad to say that most of the big manufacturers of these goods vehicles were co-operating with them, and had agreed in principle, through their organisation and their agents, to arrange for the fitting and the connection of these plants. It was only in that way, using the very highly developed industry that it was, that they could make a success of this matter.

Planning and Distribution

The provision and distribution of the necessary selected fuel required a good deal of planning. The plans were complete. They had now to elaborate the plans in some detail, but they would have the necessary provision of fuel for use by the plants at the time the vehicles could be on the road. In the meanwhile, stocks were being accumulated by the operating companies and otherwise so that they could have something in hand. It was only anthracite, plus a little low-temperature coke, that could be made available. Substantially only anthracite was available to them for that purpose. Although anthracite fuel was not activated, very good results indeed were achieved by it, and it might be that before long it would be possible to suggest a means of activating the anthracite coal itself. He expected to have the whole of the arrangements completed for the distribution of fuel and for accumulating stocks all over the country, so that they could have stocks in hand against the demands that would be made upon them for fuel when up to 10,000 of these producers were on the roads.

It was not at the moment a matter of steel that was the bottle-neck in this matter so much as it was a matter of fuel, limited for the moment, as they were, to anthracite fuel. He could not, however, see at the moment how they could possibly promise today to engage in a larger programme than 10,000. He was not an advocate merely of the Government producer. He would like to see many others at work. That was the only way they would ultimately secure the real advance that mattered. But he had had to shape his course within the limits that he knew existed today.

No Disagreement with Lord Ridley

There was no disagreement between himself and Lord Ridley. It was unfortunate that there was a need to secure the services of Lord Ridley in another Department of the Government. Lord Ridley was very reluctant to relinquish the position, but it was an opportunity for him to render yet greater service to the nation in another sphere.

The Duke of Montrose said that had the Minister taken the private manufacturers more into his confidence, and worked hand in hand with them to a greater extent, he would now have been in a position to say that there were several hundred, perhaps 1,000 or even 2,000 more, vehicles on the road than was actually the case. He would liked to have had an assurance that not only did the Government look to private manufacturers to go on and produce plants, but that they would give them same priority as the Government themselves enjoyed. He would not push his Motion to a Division, but he would watch the progress made by the Government, and if it was not much better than it had been, then within two or three months he would raise the question again.

The Motion was, by leave, withdrawn.

Mr. C. H. Newton's Message to L.N.E.R. Staff

The difficulties experienced by the railways in serving the travelling public at the present time are emphasised in a message which Mr. C. H. Newton, Chief General Manager of the L.N.E.R., has sent to his staff.

"The number of our customers runs into hundreds of millions in the course of a year," he says. "At all times we do our best to make each customer feel that his particular requirements get personal attention, but it is not becoming easier, after nearly 3 years of war, to satisfy the customer. Because of war conditions train services are curtailed; trains may be running late, and are often uncomfortably crowded. Air raids and blackout do not help. All these things tend to make our customers a little more exacting, perhaps at times a little more difficult to deal with. It is up to all of us to deal patiently, carefully and courteously with their enquiries, or, maybe, their complaints.

"It is for that kind of dealing that railway staffs have earned a high reputation in the past, and wartime conditions, however difficult, will not, I feel sure, be allowed to become responsible for any failure in that respect."

Photographing Blue Prints

Before the introduction of the micro-photographic method of obtaining miniature reproductions of documents, the L.M.S.R. was producing copies of important drawings on reduced negatives. In its photographic studio at Derby the L.M.S.R. has an apparatus by means of which paper negatives are made from large, complicated, and fine-work drawings. The originals can be reduced to negatives of any size, but 12 in. × 10 in. has been found the most satisfactory. To reduce an involved drawing 75 in. × 40 in. below 12 in. × 10 in. is not really practicable, and it is quite out of the question to bring it down to the limits of a 35 mm. film (as is done in the case of micro-photography), because the latter method is not sufficiently accurate to produce the required results.

The L.M.S.R. adopted its own process in pre-war days as a precaution against fire, but as the danger of destruction is naturally greater during hostilities, the work has been extended and negatives of the more important drawings covering L.M.S.R. standard locomotives are now filed in a strong room.

During the past twelve months, 2,300 reduced negatives have been made for the various departments of the L.M.S.R. and experience has proved that quite legible reproductions are possible of the most complicated material.

The method adopted has a further advantage in that positive transparencies on ortho-film paper can be produced from the negative, enlarged or reduced as required, and from these transparencies blue-prints, dye-line prints, or true-to-scale prints can be made. In many directions there is a very great demand for reduced prints of drawings, and this process provides a ready means of meeting the demand.

The Home Railway Interim Dividends

The following announcements relating to the distribution of revenue in the form of interim dividend payments in respect of the first six months of this year have been issued by the boards of the controlled railway undertakings. At the time of going to press, only one announcement —that of the London Midland & Scottish Railway Company—remained to be made. Details of the decision by the board of that company will be given in our next week's issue.

London Passenger Transport Board.—The London Passenger Transport Board announced on July 22 that a payment on account of interest on London Transport "C" stock for the financial year ended on December 31, 1942, would be made by the board's registrars, the Bank of England, on August 21, 1942, to all holders of London Transport "C" Stock whose names were registered or inscribed in the books of the Bank of England at the close of business on July 28, 1942, such payment to be at the rate of 1¼ per cent., less income tax at 10s. in the £. For the year ended December 31, 1941, the interim payment was at the rate of ¾ per cent. with a final payment at the rate of 2⅛ per cent., making 2⅞ per cent. for the year. The board's income was now substantially governed by the amount of the fixed annual sum which was receivable under the Railway Control Agreement, and the board was making a more even distribution as between the interim and final payments. It was for this reason that the payment on account of interest on the "C" stock to be made was higher than that which had been made a year ago.

Southern Railway Company.—The directors of the Southern Railway Company announced on July 23 that the estimated net revenue accruing to the company for the first half of the year was sufficient to pay (less income tax at the rate of 10s. in the £) interim dividends of 2½ per cent. on the guaranteed preference and preference stocks and 2½ per cent. on the preferred ordinary stock, and such interim dividends would be paid accordingly. An interim dividend of 2½ per cent. was paid on the preferred ordinary stock last year. The warrants will be posted on August 19 to those proprietors whose names were registered in the books of the company on July 6, on which date the balances were struck.

London & North Eastern Railway Company.—At the meeting of the board of the London & North Eastern Railway Company on July 23 interim dividends for the past half-year at the following rates were declared: 2 per cent. actual for the half-year on the 4 per cent. first guaranteed stock; 2 per cent. actual for the half-year on the 4 per cent. second guaranteed stock; 2 per cent. actual for the half-year on the 4 per cent. first preference stock; 2½ per cent. actual for the half-year on the 5 per cent. redeemable preference stock, 1955; 1 per cent. actual for the half-year on the 4 per cent. second preference stock; in each case less income tax at 10s. in the £. The warrants for these dividends will be posted on August 14.

Great Western Railway.—The directors of the Great Western Railway Company on July 24 declared an interim dividend of 2 per cent. for the half-year ended June 30 last on the consolidated ordinary stock. The increase of ½ per cent. as compared with the June, 1941, half-year must not be regarded as indicating an increase in the dividend for the full year. The dividend warrants will be posted on or about August 18.

Staff and Labour Matters

N.U.R. Annual Conference

The annual conference of the National Union of Railwaymen was this year held at Blackpool from July 6 to 18, and the usual mass meeting, which was addressed by Mr. John Marchbank, the General Secretary of the union, was held on Sunday, July 5. This is the last annual conference of the union that Mr. Marchbank will attend in the capacity of General Secretary for, as announced in a recent issue, he retires at the end of the year and Mr. J. Benstead, the Assistant General Secretary, has been appointed as General Secretary in succession to Mr. Marchbank.

Mr. F. J. Burrows opened the conference and, in the course of his presidential address, he suggested that plans for the unification of the railways were already under way and he made a strong plea that the three railway trade unions should form a unified body.

The conference dealt with a large number of subjects, which included the complete co-ordination of all transport by land, sea, and air, including coastwise shipping, and the resolution which was passed declared that the co-ordinating system, with full representation of trade unions, should be based on public ownership and control and that only by co-ordination of the industry could an efficient and economical transport system be operated and the maximum war effort achieved.

Mr. Benstead said that, if it was necessary for the Government to control transport during wartime, it was equally essential in peacetime that the transport industry should be run in the service of the community. The future of transport, he said, would be settled on the floor of the House of Commons, and he urged members to see to it that the mistakes made after the last war were not repeated. The mere nationalisation of railways, leaving other sections of transport completely under private enterprise, would not solve the problem. One of the greatest mistakes after the last war was that road transport was allowed to come into being totally unregulated and creating a problem which was almost impossible of solution. He suggested that after this war we should see the greatest increase in air transport the world had ever known, and it must be controlled on behalf of the nation and by the nation.

A resolution approving the decision of the Executive Committee of the union in submitting a claim for an increase in railway workers' wages of 10s. a week, declared that the advance should be applied over and above any decision that might be reached by the Industrial Court on the separate claim for railway shopmen, and added; "While appreciating the very strong feelings which exist in many parts of the country, and the need for an early settlement of our claim, we call upon all our members, in view of the present position, to do everything possible to maintain an efficient service, and to use every effort themselves in the interest of efficiency and speedy transport, so that the maximum war effort can be achieved."

Road Haulage Wages Board

The Road Haulage Central Wages Board met on July 8, to consider the workers' application for an increase in wages, overtime, night work payment, and subsistence allowances. The employers agreed to increase the basic subsistence allowance, and in view of this the workers modified certain points in their application. Statements to the effect that the employers agreed to the payment of subsistence where a man is away from home for six hours or more, are incorrect. The question of an increase in wages and overtime rates was remitted, without prejudice to either side, to the Emergency Conditions Committee, which will meet today, July 31. The Emergency Conditions Committee, which itself has no power to fix remuneration, will report back to the board at a later meeting.

British and Irish Railway Stocks and Shares

Stocks	Highest 1941	Lowest 1941	Prices July 24, 1942	Rise/ Fall
G.W.R.				
Cons. Ord.	43¾	30½	46½	—
5% Con. Pref. ...	109¼	83½	108	+ ½
5% Red. Pref. (1950)	105½	96½	—	—
4% Deb.	113½	102½	108	—
4½% Deb.	115	105⅝	108½	—
4½% Deb.	121½	112	114½	—
5% Deb.	132	122	127½	—
2½% Deb.	70	62⅜	72½	—
5% Rt. Charge ...	129½	116	125½	—
5% Cons. Guar. ...	128	110½	125	—
L.M.S.R.				
Ord.	17¼	11	20½	+ ½
4% Pref. (1923) ...	53	33½	56	—
4% Pref.	68½	48½	71½	—
5% Red. Pref. (1955)	97⅛	77	99½	—
4% Deb.	105½	97	104	—
5% Red. Deb. (1952)	110½	106½	109½	—
4% Guar.	100	85½	100½	—
L.N.E.R.				
5% Pref. Ord. ...	3¾	2¼	4	— ¼
Def. Ord.	2	1¼	2½	— ⅛
4% First Pref. ...	52½	33	55	—
4% Second Pref. ...	19⅜	10	23	—
5% Red. Pref. (1955)	79½	52	89	+ 1
4% First Guar. ...	90½	74½	94	—
4% Second Guar. ...	80½	59	83½	— ⅛
3% Deb.	79½	68½	79	—
4% Deb.	104	91⅛	103½	—
5% Red. Deb. (1947)	106	102½	104½	—
4½% Sinking Fund Red. Deb.	103½	99⅛	104	+ ½
SOUTHERN				
Pref. Ord.	65½	43½	67	+ 2
Def. Ord.	15⅝	9	17	—
6% Pref.	107	77½	107	—
5% Red. Pref. (1964)	107	89½	108½	—
5% Guar. Pref. ...	128	111	125	—
5% Red. Guar. Pref. (1957)	114½	107½	111½	—
4% Deb.	112	102½	107	—
5% Deb.	130½	119	127½	—
4% Red. Deb. (1962–67)	108½	102	108½	—
4% Red. Deb. (1970–80)	108½	102½	107½	—
FORTH BRIDGE				
4% Deb.	99½	90½	105	—
4% Guar.	99	85½	103½	— ½
L.P.T.B.				
4½% "A"	120½	109½	112½	—
5% "A"	130½	115½	123½	—
4½% "T.F.A." ...	103½	99½	100	—
5% "B"	117	102	114½	+ 1
"C"	46¼	28¾	45	+ 1½
MERSEY				
Ord.	24¾	19½	22	—
4% Perp. Deb. ...	100	90	99§	— 1
3% Perp. Deb. ...	73½	63	77§	— 1
3% Perp. Pref. ...	58	51½	59	—
IRELAND				
BELFAST & C.D.				
Ord.	4	4	9	—
G. NORTHERN				
Ord.	14½	3	20¼	+ ¼
G. SOUTHERN				
Ord.	14½	5	12½	—
Pref.	17	10	19½	+ 1½
Guar.	44	16	42	+ 3
Deb.	61	42	62	—

§ ex dividend

Notes and News

L.M.S.R. Station Closed.—Kelvinside Station, L.M.S.R., has been closed to traffic from July 1.

North Central Wagon Co. Ltd.—A dividend of 7½ per cent. (against 5 per cent.) is recommended on the ordinary capital.

George Lunn's Tours Limited.—The name of this company was on July 17 struck off the register, and the company was thereby dissolved.

Postal Traffic Receipts.—The average daily receipts, from postal traffic, of the Post Office in the United Kingdom during May was £187,131, compared with £185,430 for April, and with £177,387 for May, 1941.

Change of Address.—The address of the Manila Railway Co. (1906) Ltd., Manila & General Investment Trust Limited, and Barranquilla Railway & Pier Co. Ltd., is now Boyne Court, Boynton Road, Maidenhead.

Vickers Limited.—Interim dividends were declared on July 16, of :—2½ per cent. actual, less tax, on the preferred 5 per cent. stock ; 2½ per cent. actual, less tax, on the 5 per cent. preference stock ; and 2½ per cent. actual, free of income tax up to 6s. in the £, on the cumulative preference stock. Payment will be made on August 21.

Argentine Road Traffic.—There are still comparatively few good roads leading out of Buenos Aires, but more are being built rapidly. The rule of the road in Argentina is for traffic to keep to the left, and motorcars sold locally are of the right-hand drive type. Speedometers give their indications in kilometres. The use of headlights is forbidden in the City of Buenos Aires, but sidelights are required.

Ferrocarriles de La Robla.—Gross earnings in 1941 of this Spanish railway amounted to 14,138,647 pesetas, and working expenses to 9,519,458 pesetas. Net earnings were 4,664,189 pesetas and operating ratio 67·1 per cent. A dividend of 7 per cent. is declared on both classes of shares. The company owns 312 km. (194 miles) of metre-gauge line. It has 43 locomotives, 31 carriages, and 1,194 wagons, according to the latest returns.

Great Southern Railways (Eire).—For the 28th week of 1942 the great Southern Railways (Eire) report passenger receipts of £43,925 (against £48,474), and goods receipts of £61,253 (against £47,045), making a total of £105,178 (against £95,519), for the corresponding period of the previous year. The aggregate receipts to date are passenger, £956,072 (against £1,064,796) goods, £1,662,873 (against £1,392,202), making a total of £2,618,945 (against £2,456,998).

Argentine Road Development.—An interesting description of the highway from Buenos Aires to the extreme south at Punta Arenas is given in *Foreign Commerce Weekly*. This road, which may be regarded as a continuation of the Pan American Highway described in THE RAILWAY GAZETTE of May 15 last, at page 569, is about 1,985 miles in length, and passes through southern Argentina for its whole length except for about 100 miles at the southern end, where it crosses the frontier into Chile and runs on to Punta Arenas, the southernmost city in the world. The road is passable all the year round, but is paved only between Buenos Aires and Bahia Blanca. Travellers generally take the bi-weekly sleeper as far as San Antonio, about 680 miles, whence the journey may be continued by motorbus. The run south to Punta Arenas is about 1,300 miles, and takes about 6 days, with a change of bus at Rio Gallegos. From the latter point to Punta Arenas the road is hard-surfaced.

Aldershot & District Traction Co. Ltd.—Controlled jointly by the Southern Railway Company and Tilling & British Automobile Traction Limited, this company secured in the year to May 31, 1942, a net profit of £16,590, after applying £10,077 to general reserve, against £19,345 last year (after £20,000 to general reserve). The directors have declared a dividend of 10 per cent., less tax, on the ordinary shares, the same as for last year.

Queue-Breaker Fined.—For a contravention of the Formation of Queues Order committed in Falkirk on July 4, a man was fined £3, with the alternative of 20 days imprisonment, at Falkirk Sheriff Court on July 20. The Procurator-Fiscal stated that this was the first case of the kind in the town. Between 40 and 60 people had queued up for a bus, and accused came rushing along between the queue and the near side of the bus, and got on to the platform. He was told to get off, but refused, and had to be put off by the conductor and the driver.

German Wagon Building.—Dessauer Waggonfabrik A.G. (which belongs to the Machinenbau- und Bahnbedarf undertaking) showed for 1941 a net profit of RM. 121,000, compared with RM. 120,200 for the year before ; a dividend of 6 per cent. was paid, as in 1940, on the share capital of Rm. 2,000,000. Invested capital was RM. 1,300,000 (RM. 1,350,000 the year before) ; circulating capital was RM. 5,110,000 (RM. 3,480,000 in 1940) ; liabilities were shown as RM. 3,720,000 (RM. 2,190,000 the year previously) ; and reserves totalled RM. 250,000 (the same figure as in 1940).

A. C. Wickman Limited.—After charging management remuneration, directors' fees, working expenses, and E.P.T., the profit for the year 1941 amounted to £190,428 (£199,381). The net profit, after charging £75,248 (£55,280) for depreciation, A.R.P., etc., and making provision of £82,000 (£85,000) for income tax, was £33,180 (£59,101). Allocations include £2,882 (£2,646) for capital redemption, and £5,000 (nil) to general reserve. The final ordinary dividend proposed is again 7½ per cent., making 12½ per cent. for the year (same), and the balance to be carried forward is £29,267, against £28,885 brought in. The bank overdraft (unsecured) has been reduced from £151,912 to £38,529.

Deutsche Eisenbahn-Betriebs Ges. A.-G.—This company is a holding and working concern in respect of a number of light railways, and also owns certain secondary lines, mainly in Wurttemberg and Baden, and controls the majority interest in the Vorwohle-Emmerthaler, in Hanover. It has made no profits for some years, and it is thought in Hamburg, where a committee of shareholders is being formed, that the company may be taken over by the Reichsbahn, under legislation providing that the latter may take over any railway company on the basis of the average financial results of the preceding four years. The company's share capital amounts to about RM. 8,000,000 (compared with RM. 3,000,000 before the war).

Glyn, Mills & Co.—The 116th statement of assets and liabilities as at June 30, 1942, of this old-established banking firm which incorporates Child & Co. and Holt & Co., shows a sound financial position. Total assets are £55,890,550, as against £52,730,474 at June 30, 1941. In the present assets are included : £5,476,100 in coin, bank notes, and balance at Bank of England ; £3,189,651 balances with, and cheques in course of collection on, other banks in the United Kingdom ; £5,671,200 money at call and short notice ; bills discounted £1,209,076 ; Treasury deposit receipts £5,000,000 ; and investments £20,686,991, including £19,894,173 in British Government securities. These items together represent 83·34 per cent. of the deposits of £49,354,385. The issued capital of £1,060,000 and the reserve fund of £850,000 are unchanged.

Great Northern Railway Company (Ireland).—The directors have decided to pay on October 1 next an interim dividend of 2 per cent. (less income tax) on the consolidated 4 per cent. guaranteed stock in respect of the year to December 31, 1942. In the report for 1941 it was explained that the liabilities of the company under certain heads had not then been ascertained. No determination of such liabilities had been made up to June 30, 1942, and the directors have, therefore, decided that consideration of the payment of dividends on the consolidated 4 per cent. preference and on the ordinary stocks should be deferred until the end of the current year.

General Electric Co. Ltd.—Profits for the year ended March 31, 1942, amounted to £1,725,137 (£1,722,643). Depreciation takes £460,795 (£444,598), pension fund £78,911 (£69,313), and income tax reserve £685,000 (same). The available balance, after crediting £812,791 brought in, and providing for preference dividends and directors' fees, amounts to £1,182,737. The ordinary dividend is again 10 per cent., less tax, and there is again a bonus of 7½ per cent., less tax, making a total distribution of 17½ per cent., less tax, for the year, and leaving £815,379 to be carried forward. The company has had another very successful trading year, but the incidence of E.P.T. reduces the net result to that of the standard period. The demand for the company's products has continued unabated, and research activities have been maintained at a high level. The volume of export business has been satisfactory, in view of all the difficulties of present conditions.

Transport and the State.—Sir Joseph Nall, M.P., speaking at the annual meetnig of the Public Service Transport Association recently referred to Lord Reith's recent suggestion in the House of Lords for placing all transport under a national board. Sir Joseph said the primary essentials in civilised life fell mainly into three or four groups : food and water ; clothing and footwear ; housing and building ; and fuel in its crudest forms of coal, oil and timber. To these and all other industries and social amenities, transport, gas, electricity were the secondary and subsidiary servants. What possible case could there be for overthrowing the spirited enterprise of our people, whether in the form of individual or company enterprise, or the local public spirit manifested by the great municipal undertakings engaged in public services or co-operative societies engaged in the distribution of commodities. To exchange all this effort for the dead hand of national bureaucracy entrenched in the concrete of rigid routine and encircled behind entanglements of unbreakable red tape, would place insurmountable obstacles in the path of industrial recovery and deny to our people every field of effort and pioneering enterprise at a time when these things would rightly seek renewed scope and expression.

Railway Stock Market

Although with sentiment influenced by the nature of the war news from Russia, there has been a reduced amount of business in Stock Exchange markets, the general tendency remained steady. There was again a firm undertone in British Funds and also in other high-grade investment issues, which reflected the continued shortage of stock and the pressure of money seeking investment. It is generally realised that home railway debenture stocks still offer yields which compare favourably with those obtainable on numerous other stocks carrying similar status as high-class investments. These debentures have maintained the slightly higher prices made recently and have remained fairly active; Great Western 4 per cents changed hands up to 108¾. Allowing for the deduction of interim dividends from prices, most of the junior stocks were again higher on balance, but they were less active. This was due to conditions ruling in markets generally this week and not to any disappointment with the interim dividends. The decisions to resume payment of interims or to bring interims more into line with the final payments, do not, of course, imply increases in the total payments. On the other hand, this emphasises confidence that total payments at last year's rates are virtually assured by the terms of the rental agreement. There is no interim payment on Southern deferred; under the terms of the original amalgamation, the payment on this stock has to be made annually. Southern preferred continues to offer a substantial yield and would seem to be moderately valued. Moreover, in other directions, L.N.E.R. second preference still yields around 10¾ per cent.; the interim dividend was in accordance with expectations, and the assumption prevails that it may be possible to improve the total payment slightly from 2⅜ per cent. to 2½ per cent. Consequently, there may continue to be a good amount of speculative attention given to this stock. Although it is realised that railway securities cannot be expected to move against the general trend, from the long term angle it is possible they may show a good improvement in price, bearing in mind that, over a period, yield considerations seem likely to attract increased attention.

Great Western ordinary stock has moved back on balance from 46¼ to 45½, but is now "ex" the 2 per cent. interim dividend. Great Western guaranteed at 124, and the preference at 106½, were also lower as a result of deduction of dividends from prices. L.M.S.R. ordinary was higher at 20¼, compared with 20 a week ago, but in this case the price is not xd. L.M.S.R. senior preference at 71½ more than maintained last week's rise; the 1923 preference at 56 was unchanged on balance. Moreover, this railway's guaranteed stock at 100½, and the 4 per cent. debentures at 104, were also unchanged as compared with a week ago. L.N.E.R. second preference was 22¾ xd., compared with 23 a week ago, and a better price ruled for the deferred stock. L.N.E.R. first preference was a point down at 54 xd., and, as previously mentioned in these notes, would seem to be relatively undervalued. Lower prices ruled for L.N.E.R. guaranteed issues, which, however, were "ex" half-yearly dividends; the firsts were 93, and the seconds 82½. This railway's 4 per cent. debentures remained at 103½, and the 3 per cent. debentures at 79. Southern preferred was 65¼ xd., compared with 65½ a week ago; the deferred at 16⅞ was unchanged on balance. The preference stock was 106 xd., and the guaranteed 124 xd. London Transport "C" moved back to 44½ xd., which compares with 45¾. Nevertheless, on balance, the reaction in the latter stock has been moderate, as it is realised that although the saving arising from the expected conversion of the 4½ per cent. T.F.A. loan will be credited to the pool while the rental agreement is in force, the saving from the conversion can in any case only accrue from 1943 onwards. There were few movements of importance among foreign railway stocks; Leopoldina Terminal debentures were marked up to 39½.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open 1941–42	Week Ending	Traffic for Week: Total this year	Traffic for Week: Inc. or Dec. compared with 1941	No. of Weeks	Aggregate Traffics to date: Totals: This Year	Aggregate Traffics to date: Totals: Last Year	Aggregate Traffics to date: Increase or Decrease	Shares or Stock	Prices: Highest 1941	Prices: Lowest 1941	Prices: July 24, 1942	Yield% (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	19.7.42	23,910	+ 5,170	29	619,140	518,020	+ 101,120	Ord. Stk.	10¾	3½	9¾	Nil
	Argentine North Eastern	753	18.7.42	ps. 233,600	+ ps. 17,100	3	ps. 563,400	ps. 539,600	+ ps. 23,800	,,	4	1	4¼	Nil
	Bolivar	174	June, 1942	4,368	+ 428	25	27,431	23,072	+ 4,359	6 p.c. Deb.	5	5	10	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	8	2½	16	Nil
	Buenos Ayres & Pacific	2,807	18.7.42	ps. 1,375,000	− ps. 35,000	3	ps. 3,827,000	ps. 4,077,000	− ps. 250,000	Ord. Stk.	7¼	1½	5½	Nil
	Buenos Ayres Great Southern	5,080	18.7.42	ps. 2,083,000	+ ps. 140,000	3	ps. 5,267,000	ps. 5,414,000	− ps. 147,000	Ord. Stk.	10¼	3½	8½	Nil
	Buenos Ayres Western	1,930	18.7.42	ps. 793,000	+ ps. 3,000	3	ps. 2,007,000	ps. 2,140,000	− ps. 133,000	,,	9	2½	7½	Nil
	Central Argentine	3,700	18.7.42	ps. 1,980,850	+ ps. 125,950	3	ps. 4,969,300	ps. 4,866,250	+ ps. 103,050	,,	8½	2½	6½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	9½	½	3⅞	Nil
	Cent. Uruguay of M. Video	972	11.7.42	24,298	− 503	2	34,764	42,379	− 7,615	Ord. Stk.	9½	1	43	Nil
	Costa Rica	262	June, 1942	19,581	− 5,002	50	247,801	242,941	+ 4,860	Stk.	15½	11⅛	14	Nil
	Dorada	70	May, 1942	15,882	+ 2,982	21	63,546	62,100	+ 1,446	1 Mt. Db.	97	97	88½	6½
	Entre Rios	808	18.7.42	ps. 294,300	− ps. 39,000	3	ps. 728,300	ps. 829,300	− ps. 101,000	Ord. Stk.	6½	½	5½	Nil
	Great Western of Brazil	1,030	18.7.42	9,700	+ 2,600	29	285,500	265,000	+ 20,500	Ord. Sh.	11/-	1/-	5/-	Nil
	International of Cl. Amer.	794	May, 1942	$114,834	− $7,783	20	$728,750	$552,133	+ $176,617	,,	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref	⅜	6d.	½	Nil
	La Guaira & Caracas	22¼	June, 1942	5,860	+ 785	25	37,990	35,220	+ 2,770	—	—	—	—	—
	Leopoldina	1,918	18.7.42	30,993	+ 4,091	29	849,863	693,450	+ 156,413	Ord. Stk.	4	¼	4¼	Nil
	Mexican	483	14.7.42	ps. 325,300	+ ps. 51,200	2	ps. 650,100	ps. 586,100	+ ps. 64,000	,,	⅜	¼	¾	Nil
	Midland of Uruguay	319	May, 1942	14,510	− 1,453	45	152,020	136,164	+ 15,856	—	—	—	—	—
	Nitrate	382	15.7.42	15,772	+ 10,650	27	100,400	58,832	+ 41,568	Ord Sh.	66⅜	1⅛	3⅜	3⅞
	Paraguay Central	274	17.7.42	$3,452,000	− $109,000	3	$10,118,000	$10,092,000	+ $26,000	Pr. Li. Stk.	43/-	29	42½	14⅛
	Peruvian Corporation	1,059	June, 1942	82,182	+ 18,894	52	915,630	772,792	+ 142,838	Pref.	6½	1⅛	13	Nil
	Salvador	100	May, 1942	c 106,000	+ c 46,000	45	c 959,172	c 743,683	+ c 215,489	—	—	—	—	—
	San Paulo	1,532	12.7.42	37,625	+ 3,000	28	994,118	1,037,990	− 43,872	Ord. Stk.	52	24½	52	3⅜
	Taltal	160	June, 1942	5,800	+ 3,750	27	55,510	32,595	+ 22,915	Ord. Sh.	1	6/-	1⅛	Nil
	United of Havana	1,346	18.7.42	31,427	+ 14,246	3	84,306	50,653	+ 33,653	Ord. Stk.	2½	⅛	3	Nil
	Uruguay Northern	73	May, 1942	1.137	− 344	45	13,221	12,810	+ 411	—	—	—	—	—
Canada	Canadian National	23,562	14.7.42	1,564,200	+ 455,400	28	36,848,000	30,535,200	+ 6,312,800	—	—	—	—	—
	Canadian Pacific	17,049	14.7.42	967,600	+ 134,200	28	26,139,600	21,608,400	+ 4,531,200	Ord. Stk.	13⅜	7⅛	10½	Nil
India†	Barsi Light	202	April, 1942	12,855	− 6,832	4	12,855	19,687	− 6,832	—	—	—	—	—
	Bengal & North Western	2,090	May, 1942	281,550	+ 6,732	8	555,000	555,860	− 860	Ord. Stk.	345	253	351¼	5½
	Bengal-Nagpur	3,267	30.4.42	281,325	+ 30,419	3	809,550	800,995	+ 8,554	,,	101	95½	96	4⅞
	Madras & Southern Mahratta	2,939	10.5.42	214,050	+ 13,747	6	887,325	812,094	+ 75,231	,,	105⅞	101½	99	7⅛
	Rohilkund & Kumaon	571	May, 1942	58,950	− 12,488	8	119,550	140,639	− 21,089	,,	342	290	351¼	4⅛
	South Indian	2,402	30.4.42	154,715	+ 12,687	4	487,682	419,844	+ 67,838	,,	100	87	95	3⅛
Various	Beira	204	May, 1942	66,600	—	9	600,715	—	—	—	—	—	—	—
	Egyptian Delta	607	31.5.42	11,000	+ 4,257	9	64,698	38,668	+ 26,030	Prf. Sh.	1½	29/-	2½	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	68	45	37½	9⅛
	Midland of W. Australia	277	May, 1942	26,845	+ 9,254	41	229,956	167,924	+ 62,032	Inc. Deb.	90½	86½	89½	6
	Nigerian	1,900	25.4.42	51,498	+ 137	4	191,234	240,666	− 49,432	—	—	—	—	—
	Rhodesia	2,442	May, 1942	435,574	—	35	3,817,971	—	—	—	—	—	—	—
	South Africa	13,291	13.6.42	766,534	+ 27,549	11	8,034,717	7,649,341	+ 345,376	—	—	—	—	—
	Victoria	4,774	Mar., 1942	1,339,304	+ 366,183	37	10,425,476	8,391,343	+ 2,034,133	—	—	—	—	—

Note. Yields are based on the approximate current prices and are within a fraction of ⅛ Argentine traffics are given in pesos
† Receipts are calculated @ 1s. 6d. to the rupee § ex dividend